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"The design of the Society is to institute and promote inquiries into the History, Religion, Literature, Arts, and Social Condition of the present and former Inhabitants of the Island, with its Geology, Mineralogy, its Climate and Meteorology, its Botany and Zoology."

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# ROYAL ASIATIC SOCIETY,

# CEYLON BRANCH.

## PROFESSOR VIRCHOW'S ETHNOLOGICAL STUDIES ON THE SIȠHALESE RACE.

*Read before the Anthropological Society of Berlin, January 17, 1885.*

TRANSLATED BY W. R. KYNSEY (FELLOW KING AND QUEEN'S COLL. OF PHYSICIANS) AND J. D. MACDONALD, M.D.

*(Read February 13, 1886.)*

AT the time when I wrote my treatise concerning the Vęddás of Ceylon, and their relations to the neighbouring races, it was not possible for me to obtain a single satisfactory scientific description of the principal race of the Island, viz., the Siȟhalese. What I was able to ascertain concerning them is stated on page 60 and the following pages.*

My disappointment was great at not seeing the large caravan which Herr Hagenbeck brought to Europe in 1883. At the sitting of the Paris Anthropological Society, of October 18, 1883 (Bulletins, page 713), M. Manouvrier made an official report concerning that company, the meagreness of which is even acknowledged by the author himself, who explains it as due to want of courtesy on the part of the leader. Last year another caravan visited the country, and I consider myself fortunate in finding it still here on my return to Berlin. Herr Hagenbeck himself had the kindness to give the necessary instructions, so as to facilitate my examination. After his departure Herr Von Schirp had the kindness to bring the people before me one by one. Notwithstanding this, I was only able to examine a small number of the forty persons of which the company consisted. There was all the preparation of their approaching departure going on, and I must say, like the Paris Commission, that the time spent in obtaining my results was too short. Besides, the determination of personal relations was surrounded with much difficulty. At first I was informed that with the exception of some dancers from Hindústán, the whole company was of Ceylon origin, and that of the latter, two, viz., Pichchai and Murugappa, were Tamils. Both, I was informed, belonged to a suburb of Colombo. Later, however, I ascertained through the interpreter (who said he himself was born of European parents in Ceylon) that the Tamils in question belonged to the neighbourhood of Bombay.

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* Of his former treatise on the Vęddás.

Herr H. Becker ("Cinghala and the Siṇhalese, the Land and the People of Ancient Paradise": Frankfurt-on-Maine, page 18), who wrote a not sufficiently trustworthy description of the same people, says that Murugappa came from Madras, and Pichchai from Negapatam, south of Madras. Whatever the truth may be, the hope to see Ceylonese Tamils face to face proved a delusion, and the zeal with which I engaged in the examination of this rarity influenced not a little my further proceedings.

Of the Siṇhalese proper, I chose two groups. As representing the first group, I chose the following :—

1. A little three-year old boy called Jimmy (Sinni), who with justice had become the favourite of the public ; stark-naked, with the exception of a silver fig-leaf, he tumbled unweariedly, and in constant good humour, about the arena.

2. His mother Lúsa (Louise?) Nóna, about twenty-five years old ; his father Girigóris, or Grigóris Appu, twenty-

nine years old; his mother's sister, Iṇga Ṅóna, sixteen years old; and his mother's brother, Andre Appu, twenty-one years old.

Herr Becker had made three families of these. A *Nóna* family, an *Appu* family, and an *Appuhámi* family. Nay, he went a step further, in taking Abuhámi for an Arab, or, as they say in Ceylon, for a Moor. I must leave it undetermined whether the man was called Appu or Abu. The name sounded to me almost like Appu, and Herr Kotelmann writes it so ("Magazine of Ethnology," 1884, page 165). There was no difference of opinion, however, concerning the family connections of the group.

For the second group I made choice of two of the tallest and strongest men. Both were Kúruwe (elephant-drivers) from Kandy, viz., Puñchi Baṇḍá, twenty-four years old, and Ukku Baṇḍá, twenty-two years old. Herr Becker has given a photograph of the latter. Becker is inclined to suppose a mixture of Malabar blood in these, on account of their size; but I would refer to my treatise (pages 60–64), where I have quoted the evidence of the best observers, Davy, Cordiner, and Sirr, according to which the Kandyans differ from the rest of the Siṇhalese by their greater strength, darker colour of skin, and better growth. Our Kúruwe may, therefore, be considered as the representatives of the highland type, as the members of the Abu Nóna family that of the lowland type.

In how far these represent the pure type must be left undetermined, in view of the differences of my former craniological examinations, and of the strongly prominent individual peculiarities appearing in the persons before me. The Paris Commission, whom the same difficulty faced, had come to the conclusion that the persons brought to Europe were taken from a very mixed portion of the population, and contained a large mixture of Malabar blood. I shall refer to this again, after I have discussed the principal peculiarities; but will here observe that I have come to no sure conviction on the point. In my former works I had come to the conclusion from the reports before me, that "the Siŋhalese belonged to a dark, or more correctly, a brown, smooth-haired race, not prognathous or moderately so" (page 65); and this has been confirmed in the numerous persons by whom we were visited.

As far as the colour of the skin is concerned, the Paris Commission had found that the darker portions corresponded to No. 28 of the colour table; the lighter lay between No. 22 and No. 43.

According to the table of the Stenochromic Society, the colour at the bend of the elbow in one man was determined at the letter *g*, in the second transition stage from cinnabar to greenish orange, and that of the breast of a little girl at *i* orange.

I found in the family of Abu Nóna the following:—

1. The father Girigóris showed a dark brown colour: on the brow 28=Radde 3 *g;* on the cheek 21=Radde 4 *k;* on the breast 29=Radde 3 *g;* on the hand (back) 28–29=Radde 2 *e;* palm 30–31=Radde 4 *o* approximately.

2. The mother's brother Andre: brow Radde 3 *j;* cheeks Radde 4 *h–i;* breast Radde 3 *h;* back of the hand 28–29; the fingers Radde 30 *d;* putting the skin on the stretch Radde 3 *h*, palm 26. The deep colour of the breast was on the whole reddish, but still with a strong shade of yellow.

3. The mother Lúsa Nóna: brow 30–31=Radde 4 *i;* face 32–33; breast 29–30=Radde 3 *i–k;* back of hands 22–37=Radde 4 *h*–3 *h;* palms 24. In these are shades of unequal lightness.

4. The mother's sister Iŋga: very light, back of hands 29.

5. The little Jimmy (Sinni): breast 29–30; arm Radde 3 *f;* face lighter, more yellowish brown.

---

NOTE.—I may observe that according to Radde, 1 cinnabar signifies 2 cinnabar in the first, 3 in the second transition towards orange, 30 carmine in the transition towards cinnabar.

Of the Kúruwe, of Kandy :—

1. The older, Puñchi Baṇḍá : on the brow Radde 30 *i*; on the cheek Radde 30 *k*; on the arm 29—Radde 3 *f* and Radde 10 ; on the palm 30–31—Radde 3 *e*.

2. The younger, Ukku Baṇḍá : face 4 *k*; breast 28–29 ; arm (inside) 29–30—Radde 3 *i*, (outside) Radde 2 *e*; dorsum 28–29 ; palmar 31.

These are chiefly shades of colour which, according to Radde's scale, belong to orange (4), and to cinnabar in the second stage of transition to orange. Next follow some cases in which cinnabar in the first stage of transition to orange (2), or carmine in the second stage of transition to cinnabar (30), was determined.

There is some interest in comparing the two persons from India :—

1. Murugappa, thirty-two years old : brow 29—Radde 3 *g*; breast 27–28 ; dorsum of hand likewise—Radde 30 *b–c*; palmar surface 31–32—Radde 4 *g–h* and 3 *g–h*. The nails are light and short. The shades of colour belong to the mixture of cinnabar with orange, of carmine and of orange. On putting the skin on the stretch, an underground of a yellowish colour appears, with black specks and stripes. On a simple inspection, the impression of a reddish tone of colour is imparted.

2. P chchai, nineteen years old : face 21—Radde 4 *h*; breast 43—Radde 4 *f*; dorsum of hand 28—Radde 2 *f*; palm 26—Radde 4 *k*.

In these appear no other colour than that occurring in the Ceylonese, and here also orange (4) dominates. Still, there is not wanting the transition stage of cinnabar to orange (2 and 3) and from carmine to cinnabar (30). I cannot therefore say that I found in the colour of the skin any different shades of colour not found in the skin of the Ceylonese. If the former, for example, show a much darker shade of skin than the Kandy men, still it must not be overlooked that even the Ceylonese among themselves show different degrees of darkness and fairness in their skins.

Lúsa Nóna had much lighter shades of colour than her husband and her brother. For example, I noted for Girigóris 3 *g*, for Aṇdre 3 *h*, for Lúsa Nóna 3 *i*, therefore at the time one degree lower (clearer), whereas Pichchai (4 *f*) showed a degree higher (darker) than Girigóris.

In Ceylon the opinion prevails that the Tamils are distinguished by a darker skin than the Siṇhalese. But when Davy asserts that the colour of the skin of the Siṇhalese varies from light brown to black, it must be clear that the difference cannot be constant. Percival expressly declares that the colour of Siṇhalese women approaches the yellow, and even Cordiner asserts that the colour of the higher classes is quite as light, or even lighter, than that of brunettes in England. One may perhaps infer from all this that the variation of colour of skin among the Siṇhalese is even greater than among the Tamils, and that a larger number of persons with a small amount of pigment in the skin occur among the Siṇhalese; but a means of distinguishing the dark Siṇhalese from the Tamils is not to be looked for in the skin colour alone.

I would like finally to remark that the assertion of Cordiner, that the palmar surfaces of the hands and feet of the Siṇhalese of all classes are uniformly white,—an assertion also found in Selkirk,—has not been quite corroborated in our Siṇhalese. The palms of the men show 30–31, of the women 26–24 of the Parisian colour table, therefore quite clear shades, yet still plainly pigmented. The man from Madras or Bombay, viz., Pichchai, had likewise No. 26. Yet it must not be forgotten that the Parisian colour table leaves lacunœ, and that the determination of Radde's tables give different values: for example, for No. 30–31, at one time R. 3. E., at another time R. 4. 0.

The colour of the hair was fixed by the Paris Commission, No. 48 of the table, *i. e.*, as pure black. In fact, the richly developed heads of hair of the men, woven long and gathered at the back or side of the head into a knot (*koṇḍé*), has an ebony tone of colour in all, only in the case of Ukku Baṇḍá it had a brownish appearance, was at the same time slightly curly, whilst it otherwise looked flattish, and at the most somewhat wavy towards the points. With Jimmy (Sinni) it was quite black. The careful attention paid to the hair in the way of washing, combing, and oiling, contributes not a little towards increasing the favourable impression made by it.

Hair was also richly developed on the upper portions of the body. This was especially true of the eyebrows and the eyelids, whilst the beard in the case of the men was not thick, and in several was somewhat curly.

On the other hand, the older men had hair richly developed on the body, a fact which the Paris Commission had also noted. It said: "The rest of the body was remarkably covered with hair, the breast and the hollow of the spine in particular presented, in the case of the oldest men, true tufts of hair somewhat curly and several centimetres long."

I give here shortly my notes of each person examined:—

1. Lúsa Nóna: Hair strong, black, quite smooth, only at the ends somewhat wavy, slung in a knot behind; eyebrows strong; eyelashes long and thick.

2. Iṇga Nóna: Hair quite black and smooth; only a few wavy "love locks" before the ears. The hair descends far on the brow, so that a large portion of it (brow) appears black through short hairs. There is a soupçon of a moustache on the upper lip.

3. Andre Appu: Hair quite black, 30 cm. long, and throughout slightly waved; eyebrows strong, quite black, and shining; eyelashes long and thick; beard on chin and lips more richly developed; hair somewhat wavy.

4. Girigóris Appu: Hair long and black, stretched back over the head and held by a comb, gathered up in a knot behind; moustache and beard on chin somewhat sparse and wavy.

5. Jimmy: Quite black, short cut, thick rough hair.

6. Ukku Baṇḍá: Hair long, black, with brownish shade, curly, gathered in a knot; eyebrows moderately developed; eyelashes short.

7. Puñchi Baṇḍá: Hair long and wavy, gathered in a knot behind; black beard, thin, but long and somewhat wavy; breast and arms strongly covered with hair.

I add here also the results of the examination of the two Indians:—

1. Murugappa: Hair smooth and black, cut short in front, slung in a knot behind; beard thin, but individual hairs strong; breast and abdomen covered with strong and long hair.

2. Pichchai: Hair quite black, drawn back tightly, scarcely wavy; eyebrows strong; eyelashes long; moustache black and strong; whiskers moderately strong.

On microscopic examination I find that in the hair of the Siṇhalese there is, without exception, almost a complete failure of, or an extremely diminished, medulla. On transverse section a very small central pith is occasionally observed, generally not greater in diameter than a blood corpuscle, and quite colourless; only sometimes, as, for example, in the case of the little Jimmy (Sinni), this narrow strip of medulla is pigmented. The peculiar colouring matter of the hair lies in the fibrous portion, and strongest in the surperficial parts. Only the outermost layer (cuticula) is quite colourless and homogeneous. The colour, which is due to particles of pigment arranged lengthwise in stripes, varies very considerably. In many of the hairs observed lengthwise the colouring particles appear quite black, and also on cross section the particles appear almost pure black, whilst in other cases the external particles appear of a brown colour, and the cross section of same show light brown, nay sometimes yellowish-brown particles. This is the case with Lúsa Nóna and her brother Andre Appu, although their hair, on microscopic examination, appeared a pure black. Even in Ukku Baṇḍá the microscopic colour is brownish.

I must also add here that Tamil hair, which I obtained through the good offices of Herr Freüdenberg, the German Consul, and from Dr. Kynsey, has the same characteristics. In four of the examples, one shows a light yellowish-brown, one a light greenish-brown, a third a dark brown, and only one a pure black pigment. In the case of one Malabar I found, besides black hair, also brown.

The form of the cross section in the case of the Siṇhalese is either quite round or slightly compressed on one side, so more or less kidney shaped. This is very distinct in Ukku Baṇḍá. The hair of the women is finer, but very dissimilar in thickness. On the whole, the hair of the Tamils appears to me, on comparison, darker, somewhat stronger; yet even in their case the thickness, as well as the shape of the cross section, varies in the same individuals in a similar manner as amongst the Siṇhalese. The Paris Commission determined the colour of the iris partly at No. 2 of the table, and partly between 5 and 3 *d h*, more or less dark brown. I can corroborate this, only that I also noticed nut-brown eyes, as did Davy before me. The iris of Lúsa Nóna corresponded to No. 3 of the table, whilst her brother Andre showed the dark brown colour of No. 2. Really black irises as noted by Sir Davy and Cordiner I have, like Herr Kotelmann, never seen. I consider that they never occur. Cordiner asserts that the white of the eye appears strikingly clear, and I can corroborate this in the case of children and women, yet the men had invariably yellowish-brown pigment in the conjunctiva, especially in the middle layer. In Andre and Puñchi Baṇḍá, I noticed light brown specks. The same occurred also in the Indians, of which Pichchai showed a moderately dark brown ; Murugappa, on the contrary, a somewhat variegated iris, which externally showed a dark brown, internally a light brown zone, and between these zones a light yellow ring. Further, the eyes of the Siṇhalese appeared generally large and brilliant, somewhat elongated in the case of the men, more round in the women and children.

The interorbital distance was small, a fact also noted by the French Commission. The distance in the case of the women was 31 mm., in the men from 34 to 35 mm., whilst in the Indians it amounted to between 37 and 39 mm. The length from canthus to canthus measured in the women 30 mm., in the Appu group of men 55 to 57 mm., in the Kandyans 62 to 64 mm.

Of the Indians, Murugappa measured 30 mm., Pichchai only 55 mm. Both showed a somewhat elongated, almost narrow, still straight, palpebral opening. Concerning refraction, sharpness of vision, and colour blindness, Herr Kotelmann has given details.

I now come to the shape of the head. From the tables attached it will be seen that of the seven Siŋhalese, there were :—

Two brachycephalic, four mesocephalic, one dolichocephalic.

Brachycephalic were Lúsa Nóna (82·7) and her brother Andre Appu (83·5); dolichocephalic, on the contrary, her husband Girigóris (72·3). Next to him stand among the mesocephalic the sister Iŋga Nóna (75·8); whilst the little son Jimmy (79·6) must be classified among the brachycephalic. The average cephalic index for the whole family may be set down at 78·7, the same mesocephalic number which was obtained from all the seven measurements. The Paris Commission (Dep. 719) measured seven men, five women, and two children. Among these fourteen persons none were dolichocephalic, eight were brachycephalic, six were mesocephalic. As also here among the mesocephalic a high index number appeared, it follows that the average is brachycephalic, viz., 81·9. Both averages, that of Berlin and that of Paris, approximate each other, but it must be distinctly remembered that they were obtained from different persons.

These results stand in strong contrast to those obtained from any examination of Siŋhalese skulls hitherto made. I have described these in my treatise (page 73 and the following) in detail, and with every care. After eliminating all doubtful skulls, I had fourteen left. These had a mean index of 71·8, a distinct dolichocephalic measurement; nay, there was not among them a single brachycephalic, not even a mesocephalic skull. On account of this peculiarity I refer here to my writings, and I have no reason to doubt the correctness of the results then obtained. The results obtained by the measurements of skulls of these living persons cannot be made to agree with those obtained by me from the skulls formerly measured, even making all reasonable allowances and corrections.

There remains a want of agreement not to be for the moment reconciled. Either the type of the Siņhalese skull is not dolichocephalic as I assumed, or the living Siņhalese, even including Girigóris Appu, were not pure Siņhalese.

The latter appears for the moment more probable than the former, because in the first place it is difficult to explain where these Ceylon dolichocephalic skulls could have come from if they were not Siņhalese, as I have already proved (page 91) that the mean cephalic index of Tamil skulls from Ceylon hitherto examined is mesocephalic, viz., 76·3. If one therefore were inclined to conclude with the Paris Commission that these persons were fair Tamils (Malabars), a more satisfactory explanation would be obtained.

Now, however, I would accept such an explanation with the greatest reserve.

The opinion that the Siņhalese is a mixed race is very old, and a descent from the Malays and Mongolians has been surmised. More details on this point will be found in my treatise on the Vęddás, on page 110 and following pages. I will only add that should in reality a large portion of the Siņhalese turn out brachycephalic or high mesocephalic, the question of the relations with Indian races would acquire a greater significancy than I have been hitherto inclined to accord it. Discussing the examinations of the

Chittagong races made by Herr Riebeck, some considerations of this kind occurred to me. (His travels will shortly appear.)

A second point of difference appears in the auricular index. From the appended tables, it can be seen that only dolichocephalic Girigóris and the low mesocephalic Iṇga offer a smaller number for the auricular index, the former 60·6, the latter 64. All the other Siṇhalese have high numbers, the highest Lúsa Nóna (72·6). One may therefore conclude that the majority of the persons are hypsocephalic. This also corresponds more with earlier numbers (pages 92–140) found by me in Tamils, than with those for Siṇhalese.

A third point is the breadth of the brow, which, making all allowances for the fleshy portion, is, in all the Ceylonese measured by me, more considerable than any measured in Siṇhalese, and even in Tamil skulls.

Whilst the highest measurement of the skulls only amounted to 93 mm., the lowest measurement among the living was 98 mm. (Lúsa Nóna), and the highest 109 mm. (Puñchi Baṇḍá). This great breadth of brow contributed not a little in improving the appearance of the persons in question. In the Kandy people the forehead was high, from 70 mm. to 75 mm.

Girigóris was 67 mm., and Andre only 55 mm., less than even the women showed (58 mm. and 59 mm.).

As far as the face is concerned, I have confirmed the opinion that the Siṇhalese are not prognathous. With the exception of one woman, they were all orthognathous, and had a small mouth, although the lips were full and the front teeth large. In several it seemed to me the lower lip was comparatively strongly prominent, whilst the teeth showed a peculiar mother-of-pearl brilliancy, in which a loss of enamel forming a hollow in the crown occurred. I looked upon this at first as artificial, but according to their own assertion it arises spontaneously. It seemed to me, however, as if the mode of cleansing their teeth caused this loss of enamel. I add here a few special particulars :—

1. Ukku Baṇḍá: Mouth small, 50 mm.; lips full, but only moderately prominent, mostly the underlip, which looks bluish internally, but does not allow any peculiar pigment to be seen; teeth greatly worn.

2. Puñchi Baṇḍá: Mouth large, 55 mm.; lips full, underlip strong, livid bluish colour, but little pigment in the mucous membrane; teeth large, particularly the upper incision, much worn.

3. Girigóris Appu: Mouth 51 mm.; lips full, quite blue; pigment in the gums; teeth (above) large, shining, much worn.

4. Lúsa Nóna: Mouth 44 mm.; lips full, but short, red, no pigment in the mucous membrane; teeth, large, straight, brilliant, like mother-of-pearl, worn, with a hollow in the right middle incisor in the enamel.

5. Jimmy: Mouth 34 mm.; lips thick, but only the underlip prominent.

6. Andre Appu: Mouth small, 44 mm.; lips full, somewhat bluish, but not pigmented; upper lip short, not prognathous; teeth large, brilliant, like mother-of-pearl, with several hollows in the enamel; chin delicate, round, and prominent.

Indians :—

1. Murugappa: Mouth large, 61 mm.; lips full, especially the underlip, which from a full supply of blood and pigment has a dark bluish-brown appearance; on the gums a brownish stripe parallel to the edge, but still separated from it.

2. Pichchai: Mouth shorter, 52 mm.; lips full, upper short, underlip advancing, blue; the gums pigmented; teeth large, much worn.

The face index was in all chamæprosop (broad face), with the exception of Girigóris Appu, who gave a leptoprosop (long and narrow face) measure, 91·3. His long face had, as Herr Becker has remarked, a semitic touch. Andre Appu's face appeared longish: still, this was more due to the fact that it contracted very much below. The faces of the women were short, broad, and more rounded, with somewhat prominent cheek-bones. The noses also differed from descriptions hitherto given. The oldest descriptions by the Chinese (*cp.* Vedd. Book, page 61), ascribed to the Ceylonese a "bird's beak," yet many forms appeared to us amongst these people, as the index numbers will show. Girigóris' nose was the most prominent. His nose index amounted to 68·6. The two Kandyans followed with 71·1 and 71·6, then Iṇga Nóna with 76·1; on the contrary, Lúsa Nóna 83·7, her brother Andre 88·8, and the little Jimmy 90·9. This last group also includes the two Indians, with 80·0 and 83·3.

The French Commission obtained similar results: three men and two women had an index over 83. Three men and three women under 74 (among these one 64·4, one 66·6, one 68·5, one 68·7, and one 69·2).

I add here a short description of their noses:—

1. Girigóris Appu: Nose strongly projecting, ridge curved, point prominent (snub?), alae small and narrow; a decided semitic expression.

2. Ukku Baṇḍá: Nose strongly projecting, straightest of all, sunk at the root, ridge slightly curved, point thick, alae not large.

Puñchi Baṇḍá: A nose strongly inclined to but not quite an "eagle nose," somewhat curved, point prominent, looking downwards, alae moderately wide apart.

4. Lúsa Nóna: Nasal ridge curved, short, point thick, overhanging; alae wide apart, somewhat flat; nostrils large.

5. Jimmy: Nose short, bent, point thick, projecting; septum short; alae very broad and full.

6. Andre Appu: Upper portion of nose thin and small, somewhat curved, point projecting, alae wide apart.

Davy has given us a poetical description of a Siṇhalese beauty (Vedd. Book, page 63). The nose is described in it as a "hawk's beak." Our ladies had nothing of that, yet it seems as if such faces had not quite died out. The cabinet photograph of a Siṇhalese beauty, which Herr Hagenbeck has presented to me, shows such a nose, and we can only regret not having seen the original.

In the Indians I found the following: Nose on the whole straight, but small and narrow, towards lower part wider, even in the bony part; point little developed; septum little projecting; alae very broad, 46 mm.

As a conclusion to this discussion of the shape of the face, I mention that the ear, as a rule, was delicate, and in many cases small. In three persons, viz., Lúsa Nóna, Andre Appu her brother, and the Kandyan Ukku Baṇḍá, I noticed that the lobule was adherent to the side of the head. This was also the case with the Indian Pichchai. The body was strongly built in all cases. The Kandy men alone attained to a good height. Puñchi Baṇḍá 1,745, Ukku Baṇḍá 1,674; Girigóris and Andre Appu measured only 1,576 and 1,583 mm., the women 1,425 and 1,451 mm. Travellers have given five feet four, five, six, or seven inches = 1,626 to 1,702 mm., as the average height of the men. The French Commission give only two measurements, 1,596 and 1,576 mm.

The family (Abu Nóna) appears to be, from this, unusually small. Girigóris is at the same time thin, his calves are but little developed, notwithstanding which he is a tree-climber by profession, and climbs with the greatest ease the highest tree. Andre is also thin, but nevertheless of great strength. Lúsa Nóna, although said to be only twenty-five years old, makes a pleasant impression, but is yet aged; she has a delicate build of body. The little Jimmy, on the contrary, is a fat, chubby-cheeked boy of unwearied activity, but truly a little glutton. His shining blackish-brown body corresponds exactly with the description given by Emerson Tennent of Siṇhalese children: "They looked in their nakedness like living bronzes." Iṇga Nóna is sixteen years old, very light, small, and fat; her form is quite round, her bosom prominent, and her thick cheeks swell still more prominently when she laughs.

Puñchi Baṇḍá has a proud-looking figure, with full form and strong muscles. He looks older than twenty-four years, the age assigned to him. Ukku Baṇḍá is also strong and muscular.

For dynamometric measurements, I refer to the report of the Paris Commission.

The ratio between the measurements round the hip and the height of the body showed such great differences, that I thought at first on revising my notes,—I had made some mistakes. The measurements were in all cases greater than the height of the body: even the women showed differences of 67 and 57 mm. Among the men the difference is more striking: Girigóris Appu had 82, Andre Appu 123, Puñchi Baṇḍá 60, Ukku Baṇḍá 118 mm. of a difference. The differences in the lengths of the arms are not less striking: Girigóris 732, Andre 761, Puñchi 806, Ukku 784 mm.

Shoulder-breadths measurements:—Girigóris 340, Andre 376, Puñchi 395, Ukku 391 mm. These are comparatively not widely diverging numbers. The circumference of the chest was considerable, greatest in the case of Ukku Baṇḍá, viz., 925 mm. The women have, on account of the full development of the breasts, a larger circumference than the men; the lengths of the lower extremities vary also. The height of the trochanter in Puñchi Baṇḍá amounted to 934 mm.—that was the largest number: the smallest was Andre Appu, 840 mm.; but the ratio is everywhere the same in men and women, *i. e.*, the height of the trochanter is to the height of the body as 1 to 1·8.

The shape of the hands and feet was uncommonly elegant, especially that of the feet. The Kandy men wore leather shoes, and although these were comparatively loose, still the small toes were pushed somewhat inwards, and this was even noticeable also in the next toe. Girigóris wore sandals, and had a wide divergence between the great and the second toe. Nevertheless, his feet also appeared comparatively natural. In the rest the shape of the foot was free from artificial deformities. I do not remember ever having seen such naturally shaped feet. As is well known, the feet among nations wearing shoes or boots are exposed from the earliest years to so much pressure, that a naturally-formed foot is only seen in the case of the newly born, or in children of tender years. Even sandals when constantly worn press the toes together, and cause a permanent deformity very soon.

One seeks in vain among marble statues for a regularly formed foot. Even the gods of the Greeks have their small toes laterally compressed. Here, however, I was overjoyed to find feet with perfectly natural shapes. As their stay in Berlin was to be short, I begged Herr Hagenbeck to have a selection of casts of hands and feet made for me in Hamburg, and I am in the fortunate position to be able to lay before you good models of these. For this I have to thank Herr Hagenbeck.*

In the first place, there is a strong contrast between the feet of the Siŋhalese and that of the Indians. This is partly due to the general development of the body. The ratio between the length of the foot and the height of the body is in all three the same, viz.: in the men as 1 : 6·6; women, 1 : 6·5. But the development of the feet is quite different. In Murugappa the whole foot is heavy, bony, and broadly developed, whilst in the Siŋhalese the foot is delicate, thin, and narrow. The breadth-index of Murugappa is 40·5, of Girigóris 36·8, of Lúsa Nóna 28·2. The Paris Commission found among the men indices of 39·5 to 44·3; among the women 36·5 to 40·6.

In all, the toes were very movable, and they were capable of diverging widely at will. On this depends the safety in climbing,—which is possessed by Girigóris to a wonderful degree,—and the capability to seize objects with their toes. As seen from the illustration,* the divergent position in the case of Murugappa is well shown; in the case of the Siŋhalese to a much smaller degree. In all cases, however, is seen the great interval between the great toe and the others, especially in Murugappa. The three middle toes form a group by themselves.

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* Illustrations of a few of these are annexed to the German text. The views of them are taken laterally and from above, and designed with the greatest care by Herr Eyrich, one-sixth their natural size. No. 1 is the foot of Lúsa Nóna, No 2 that of Girigóris Appu, and No. 3 that of Murugappa, one of the Indians. The cast of the foot of Iŋga Nóna is not given, nor the casts of the hands of any of the troupe.

At the same time, one may notice the length of the toes of this middle group, especially of the second. The Siŋhalese have these toes almost in the shape of fingers, straight and long. Murugappa, who also has short and thick fingers, shows also short toes, thick and plump; and the great toe is so widely divergent as to project but little over the second. Among the women, the second toe projects beyond the first, notably in Iŋga Nóna, whilst in Girigóris the corresponding toe is shorter. This is strongly developed in Andre Appu. The terminal phalanx of the great toe is very broad in all cases; the smaller toe is very short. The middle of the foot is small, thin, and straight. It widens gradually up to the heads of the metatarsal bones, where it, in comparison with a foot accustomed to shoes, appears strikingly broad. Notwithstanding this the great toe has no proper ball; externally the little head of the fifth metatarsal bone is somewhat prominent. Further back the external border runs uniformly, whilst in the inner border rises quickly, forming a well-marked arch. The heel is strong and firmly set. The span of the foot is high and delicately arched, especially behind the first metatarsal bone. The tarsal bones are strong, little prominent, and very high. In Murugappa the height above the ground is 59, in Lúsa 46, in Girigóris 48, in Iŋga 54, and in the two Kandyans 61 and 65 mm., respectively.

With this I finish the analysis to which this interesting company has given rise. Without as yet classifying the subjects of my discourse, I dare to hope that the communication as it stands will be a sufficient excuse that I do not come to any definite conclusion. How many of the differences observed are merely due to the individual, how many are due to race-difference, I cannot satisfactorily say. Take an example: according to my earlier craniological examinations, the Siŋhalese are dolichocephalic. Now, among the people actually measured by me here, I find only one dolichocephalic, viz., Girigóris Appu, the same whom Herr Becker took for an Arab. In reality his face, particularly his nose, had a distinct semitic look. But the Moormen are now-a-days Muhammadans, and if in rare cases they mix with the Siŋhalese (see my Vęddá Book, page 94), it does not follow that they also change their religion.

Besides, the Jewish face appears among so many of the inhabitants of the islands of the East, that I would not support such a supposition on that ground. Also the deduction drawn by Herr Becker from the name *Abu* is so uncertain, as I have already shown, that it proves nothing. If Girigóris is not an Arab, he must be considered as a typical Siŋhalese. If this is accepted, then the others measured by me are not typical: even the stately Kúruwe from Kandy, and least of all the woman Nóna. Their short and broad skulls, their chamæprosopia (broad faces), and in particular their broad-pressed-in-curved noses, with the alae wide apart, point with a strong probability to a mixture with the Tamils.

The little Jimmy resembled his father so little, that one felt almost inclined to disbelieve the relationship. He was, however, the very image of his mother. His roundish-square head, his full-moon face, his ape-nose were only exaggerations of the mother-type. But the colour of the skin was quite dark, whilst the mother's was light. Who can doubt but that here individual and sex peculiarities were recognisable? but where is the line of demarcation of ethnical peculiarities? Unfortunately there is still wanting an exact description not only of the Ceylonese Tamils, but also of the Indian Tamils. I have therefore earnestly requested Herr Hagenbeck, in case he should again bring such people to Europe, which is not at all unlikely, to bring well-authenticated Tamils. One thing seems to me certain. If the French ethnologists entertain the opinion that the dark-skinned races of India originated from Negritos, it is most probably a mistake. The Negritos known to us have that woolly hair which consists of small, close, spiral rolls, quite similar to the Blacks of Africa, and not only to the Niger proper, but, as lately discussed, also to the Caffirs and the other Bantu nations. In the case of the Africans, each spiral roll is so hard that it feels like a solid body. In the case of the Negritos the rolls are somewhat soft, from the fineness of each individual hair. Our Ceylonese show the very opposite of this. They are in the plainest meaning of the term smooth-haired, without the shade of a curl; the beautiful appearance of their long black hair is certainly improved by the care they bestow upon it, but no Negrito is capable, so far as we know, by any amount of care to change his hair in a similar manner.

Even the Dravidian Indians have nothing of the Negrito hair. One must therefore look to other sources than this, and it is possible that they are a very mixed race. As far as language is concerned, the Siṇhalese must be referred to an Aryan origin. Their history favours this idea; but are, on this account, Mongolian and Malayan connections to be excluded? I cannot believe it; at all events, I can say that many among the people presented to me, especially among the women, seem to point to Eastern relationships, and that if these people are really Siṇhalese, without any fresh mixture of blood, then must the Siṇhalese race be looked upon as a mixed race in the highest degree.

| Siṇhalese and Indian. | Siṇhalese. | | | | | | | Indians. | |
|---|---|---|---|---|---|---|---|---|---|
| | Girigóris Appu. ♂ 29 J. | Lúsa Nóna. ♀ 25 J. | Jimmy (Sinni). ♂ 3 J. | Andre Appu. ♂ 21 J. | Iṇga Nóna. ♀ 16 J. | Puñchi Baṇḍá. ♂ 24 J. | Ukku Baṇḍá. ♂ 22 J. | Murugappa. ♂ 32 J. | Pichchai. ♂ 19 J. |
| **I.—Head Measurements.** | | | | | | | | | |
| Greatest length ... ... | 188 | 168 | 167 | 182 | 178 | 189 | 186 | 196 | 183 |
| Greatest breadth ... ... | 136 | 139 | 133 | 152 | 135 | 150 | 145 | 147 | 147 |
| Height of ear ... ... | 114 | 122 | 110? | 123 | 114 | 128 | 125 | 128 | 127 |
| Breadth of forehead ... ... | 98 | 106 | 88 | 104 | 100 | 109 | 101 | 104 | 107 |
| Height of face, A ... ... | 138 | 162 | 130 | 169 | 162 | 181 | 186 | 193 | 163 |
| Height of face, B ... ... | 116 | 103 | 81 | 114 | 104 | 111 | 111 | 119 | 106,5 |
| Height of face, C ... ... | 71 | 63 | 40 | 69 | 62 | 70 | 70 | 73 | 66 |
| Breadth, *a* jugal ... ... | 127 | 129 | 110 | 134 | 125 | 137 | 132 | 144,5 | 134 |
| Breadth, *b* malar ... ... | 87 | 75 | 59 | 87 | 86 | 87 | 94 | 95 | 89 |
| Breadth, *c* mandibular ... | 101 | 97,5 | 86 | 100 | 90 | 104 | 93 | 106 | 102 |
| Interorbital, *a* ... ... | 35 | 31 | 28 | 35 | 31 | 35 | 34 | 37 | 39 |
| Interorbital, *b* ... ... | 90 | 91 | 78 | 92 | 91 | 99 | 96 | 107 | 94 |
| Nose, height of ... ... | 51 | 43 | 33 | 45 | 42 | 53 | 52 | 50 | 48 |
| Nose, length ... ... | 51 | 41 | 27 | 39 | 35 | 45 | 48 | 46 | 41 |
| Nose, breadth ... ... | 35 (36) | 36 (38) | 30 | 40 (44) | 32 (34) | 38 (39) | 37 (39) | 40 | 40 (41) |
| Mouth, length ... ... | 51 | 44 | 34 | 49 | 45 | 55 | 50 | 61 | 52 |
| Ear, height ... ... | 56 | 50 | 46 | 52 | 59 | 60 | 59 | 69 | 55 |

| Siṇhalese and Indian. | Siṇhalese. | | | | | | | Indians. | |
|---|---|---|---|---|---|---|---|---|---|
| | Girigóris Appu. ♂ 29 J. | Lúsa Nóna. ♀ 25 J. | Jimmy (Sinni). ♂ 3 J. | Andre Appu. ♂ 21 J. | Iṇga Nóna. ♀ 16 J. | Puñchi Baṇḍá. ♂ 24 J. | Ukku Baṇḍá. ♂ 22 J. | Murugappa. ♂ 32 J. | Pichchai. ♂ 19 J. |
| **II.—Body Measurements.** | | | | | | | | | |
| Body, height ... ... | 1576 | 1425 | 769 | 1583 | 1451 | 1745 | 1674 | 1657 | 1613 |
| Hip ... ... | 1658 | 1492 | — | 1706 | 1508 | 1805(?) | 1792 | 1815 | 1723 |
| Breast, circumference... ... | 800 | 825 | — | 830 | 855 | 900 | 925 | 900 | 790 |
| Shoulder, breadth ... ... | 340 | 322 | — | 376 | 330 | 395 | 391 | 388 | 349 |
| Shoulder, height ... ... | 1314 | 1199 | — | 1330 | 1214 | 1482 | 1404 | 1375 | 1334 |
| Elbow, height ... ... | 1008 | 912 | — | 1022 | 948 | 1142 | 1083 | 1042 | 1024 |
| Wrist, height ... ... | 743 | 670 | — | 744 | 730 | 866 | 810 | 753 | 752 |
| Middle finger, height... ... | 582 | 520 | — | 569 | 572 | 676 | 620 | 588 | 594 |
| Nasal, height ... ... | 971 | — | — | 990 | — | — | — | 970 | 981 |
| Trochanter, height ... ... | 863 | 758 | — | 840 | 789 | 934 | 901 | 887 | 878 |
| Knee, height ... ... | 463 | 412 | — | 481 | 450 | 540 | 534 | 488 | 500 |
| Malleolus ext., height... ... | 48 | 46 | — | 49 | 54 | 65 | 61 | 95 | 61 |
| Hand, length ... ... | 170 | 155 | 100 | 190 | 160 | 182 | 188 | 179 | 175 |
| Hand, breadth ... ... | 75 (100) | 70 (86) | 50 | 81 (94) | 75 (95) | 94 (100) | 89 (102) | 59 | 85 (95) |
| Foot, length ... ... | 236 | 216 | 136 | 250 | 224 | 260 | 276 | 249 | 240 |
| Foot, breadth ... ... | 87 | 81 | 60 | 97 | 86 | 102 | 100 | 101 | 91 |
| **III.—Berechnete Indices.** | | | | | | | | | |
| Langenbreitenindex ... ... | 72,3 | 82,7 | 79,6 | 83,5 | 75,8 | 79,4 | 78,0 | 75,0 | 80,3 |
| Ohrhohenindex ... ... | 60,6 | 72,6 | 65,9? | 67,6 | 64,0 | 67,7 | 67,2 | 65,3 | 69,4 |
| Gesichtsindex ... ... | 91,3 | 79,8 | 73,6 | 85,0 | 83,2 | 81,0 | 84,0 | 82,3 | 79,4 |
| Nasenindex ... ... | 68,6 | 83,7 | 90,9 | 88,8 | 76,1 | 71,6 | 71,1 | 80,0 | 83,3 |

# OUTLINE OF TWO YEARS' SCIENTIFIC RESEARCHES IN CEYLON.

### BY DRS. C. F. AND P. B. SARASIN.*

*(Read February 16, 1886.)*

IN the short space of a report it will naturally not be possible to enter into any details: we can simply give a few results which seem to us to be of interest. Further, we must omit to refer to and compare notes with works already published on the different objects we speak of: this we reserve for our future publications in Europe, of which copies will be sent to the Society.

## I.—ANTHROPOLOGICAL.

We begin with some anthropological notes, and shall later on refer to our chief branch of study, zoology.

We did not intend, when we came to Ceylon, to make anthropological investigations; but as the races in this Island proved of the highest interest, we could not but spend a part of our time in examining them. During our journeys, in which we traversed the Island in nine directions, we acquired a great deal of information on this subject.

As is very well known, Ceylon contains three principal races, the Siŋhalese, the Tamils, and the Vẹddás. There are others, whom we may dismiss with a brief remark; for instance, the Moors, more or less casual inhabitants, Arabian merchants, who settle in every trading place of the East. In a very few parts only the Moors have their own villages, chiefly so in the Batticaloa district, where they form about one third of the inhabitants. The Afghans, Malays, Kaffirs, Parsees, &c., are of no importance for our purposes.

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* In offering this Paper to the Ceylon Branch of the Royal Asiatic Society, we wish to express our best thanks for the kindness shown to us by this Society in presenting us with an almost complete series of the Society's Journals. Besides, we owe a debt of gratitude to many individual Members for the ready assistance they have been good enough to give us in our exertions, and to which we think we cannot reply in a more appropriate way than by laying before you a preliminary report of our researches.

The two races, Siṇhalese and Tamils, are not living side by side in the same districts, as is often believed; such is only the case in the large towns and upon the hills, whither the Tamils are imported as coolies by the planters. Generally speaking, the Siṇhalese inhabit the hilly zone and the fertile and wet Western and Southern Provinces; they attain their greatest density, according to the census of 1881, in the district of Colombo; they are very scarce in lower Uva, in the North-Central Province, and in the northern parts of the Kurunḗgala district.

The Tamils, on the other hand, with the exception of those in the planting districts, live on the eastern coast of the Island. They are numerous in the Batticaloa district, less so in the district of Trincomalee, almost wanting on the coast north of Trincomalee. The real centre of the Tamils, however, is the densely populated Island of Jaffna, where they live to the exclusion of every other race: even the ubiquitous Moor is very seldom met with. Maṇṇár and Puttaḷam, further on, are Tamil places, and south of Negombo there is an old Tamil colony, which has existed since the time of King Gaja Bahu I. (113 A.D.).

It would be erroneous to suppose that the districts of Siṇhalese and Tamils are adjoining each other: this is only the case in very few places, as, for instance, north of Chilaw. Otherwise, a broad belt of forest land separates the Siṇhalese countries from the Tamil ones. This belt, which is almost uninhabited, and in many parts completely so, begins to the east of Saffragam (Sabaragamuwa), maintains a breadth of 20·30 miles adjoining lower Uva, and expands to about forty miles in Tamankaḍuwa. This separating belt increases to a breadth of about sixty miles in the northern parts of the

Island: almost the whole Northern Province is without any cultivation, and therefore the Tamil Island of Jaffna is separated by an enormous rampart of forest from the Siŋhalese districts, even more so than the Tamil coast of Batticaloa.

We learn in the histories of Ceylon, and observe it at the present time, that Siŋhalese and Tamils intermarry sometimes. We know, even, that many kings of Ceylon have been of Tamil blood; but notwithstanding this, a certain mutual aversion of the two races is not to be overlooked, and it is just that aversion which proves that a deep difference of race is existent. We learnt, for instance, in Trincomalee, that no Siŋhalese will die in that Tamil place, but as soon as one gets ill he returns to his native country; and other facts still further illustrating this aversion could be mentioned.

The enormous belt of forest just mentioned, and the open park country the solitude of which is only interrupted by relatively few small villages, and very seldom by large patches of cultivated land, such as near the lake of Kantalay and round other smaller tanks, is the abode of the Vęddás. They live in the eastern part of Ceylon, and are the remnants of a tribe which deserves our attention in a very high degree.

We arrived too late for the exploration of this tribe. The original wild Vęddás are extinct,—at least, beyond some quite incredible rumours, we could not find any traces of them during the three months which we spent in searching for them in the remotest parts of the Island. All the Vęddás have been induced to leave the rock-caves, their old natural dwellings, and to settle in small villages under the charge of the headmen of the adjoining districts. The purest Vęddás we found are living in the Nilgala district, and near Bintęnna; others near Mahá-oya, in the Eastern Province, and in the Friars-hood range. But even these are already so accustomed to Europeans by their frequent visits to Kandy and Badulla, and by the hunters who have been to see them, that the Nilgala Vęddás, for instance, as soon as they saw us coming, began to dance and to sing, and tried to tell us incredible stories. The settlement of the Vęddás in villages gives naturally much occasion for mixing with other elements; many Siŋhalese villagers marry Vęddá wives, and therefore, all the intermediate types between Vęddás and Siŋhalese are to be met with. In many villages of lower Uva, where Vęddás are already completely extinct, the traces of old Vęddá blood are easily noticed in the features and in the dark colour of many a Siŋhalese villager.

Similar intermarriages, or those which happen in the Siŋhalese districts, are taking place on an even larger scale in the Tamil countries. On the east coast, north of Batticaloa, there are many villages, and Vęddás have been induced to settle; and in these places the mixture of Tamils with Vęddás is conspicuous. In this way the Vęddás will disappear completely at a not very distant time; already, according to the census of 1881, there are not more than 2,228 individuals who still call themselves Vęddás. The race is not dying out, as is generally believed, but is being absorbed by intermarriage with the surrounding tribes.

Our chief object was to ascertain whether the three races of Ceylon are really so different from each other that they could be distinguished by anatomical characters, or whether the differences between them were so insignificant that no positive result could be obtained by a careful comparison. A great obstacle to our purpose was necessarily the frequent intermarriages of the three tribes, which often left us in doubt whether the men we examined were of pure blood or not. The only way to obtain a satisfactory result was therefore to collect as large a number of skulls as possible, and to take measurements of numerous specimens of each race to compile averages. Thus we collected nineteen skulls of Vęddás, fifteen of Siŋhalese, and fifteen of Tamils. We dug them all up ourselves,—with the exception of some Siŋhalese skulls,—and thus are sure that no confusion has arisen. We found no time during our stay in Ceylon to examine these skulls,—we shall do so in Europe,—and therefore are now able to speak only of the results which we obtained by measurements of living individuals. Many of these measurements will have to be compared with those of skulls where alone measurements can be taken with mathematical exactness.

To begin with the height, we found the Vęddás to be the shortest of the three races. Vęddás of Maha-oya had an average height of 1,541 mm., eight from Nilgala 1,575, thirteen coast Vęddás north of Batticaloa 1,591 mm. After these, range twenty-two Siŋhalese with 1,624 mm., and finally, as the tallest, the Tamils, of whom twenty-five have been measured with 1,652 mm. of height on the average. The size of the head does not at all correspond with the height, as the largest head does not belong to the Tamils, but to the Siŋhalese; and this fact is in accordance with the higher intellect of the latter. In size of head the Tamils range after the Siŋhalese, then the coast Vęddás, and by far the smallest heads are those of the Vęddás in the interior. The coast Vęddás contain, as already mentioned, many Tamil elements, and therefore in a number of measurements range between the Tamils and the other Vęddás.

It may be interesting to point out in which measurements the principal differences are found. Firstly, the height of the face, that is the distance from the notch of the nose to the chin, is with the Vęddá the smallest (105 mm.) on the average; it is larger in the Tamil head (111 mm.), and largest in the Siŋhalese (115 mm.), and this difference gives to the whole face a different appearance.

Secondly, we have the diameter of the back part of the skull, or the distance between the two mastoid bones, in the Vęddá only 124 mm., in the Tamil 130, and in the Siŋhalese 132. The head of the Vęddá is therefore in its back part narrower than the head of the two other races, and especially of the Siŋhalese, and we have strong reasons to suppose that the brain of the Vęddá is likewise much smaller than that of the Tamils, and still more so than that of the Siṇhalese.

Thirdly, the lower jaws of the Vẹddás are much narrower than those of their neighbours. A fourth difference is found in the size of the eyes, as the Vẹddás have the largest and the Siṇhalese the smallest eyes of the three, the Tamils ranging here also between the two others. The differences in this last measurement are naturally very small, but still noticeable.

One of the most striking features in the face of the Vẹddá is the shape of the nose; firstly, it is very broad, 40 mm., while with the Siṇhalese it is only 39 mm., and with the Tamil 38 mm.; secondly, the bridge of the nose between the eyes with the Vẹddá is in most cases very low, sometimes almost flat. This fact gives to the Vẹddá nose a strange shape, and strikingly influences the features: the bridge is higher with the two other races. The Siṇhalese have often very well-formed eagle-shaped noses.

Besides these peculiarities of the Vẹddás already mentioned, shortness of face, narrowness of the back part of the skull and the lower jaw, largeness of the eyes, and lowness of the bridge of the nose, we could mention more differences in the measurements of the head; but it would lead us too far for the present, and we think it sufficient to show that such peculiarities do exist, and are to be traced by measurement. The results which we shall obtain by comparison of the skulls, we shall be glad to lay before this Society after our return to Europe. Taking exact measurements of the limbs is still much more difficult than measuring the head, and of the results obtained we venture only to specify now the following one as fairly well established. The lower arm of the Vẹddá and also of the Tamil is relatively a little longer than that of the Siṇhalese.

The colour of the Vẹddás is always a dark and dirty chocolate brown, a colour which is likewise frequently found with Tamils, but seldom amongst Siṇhalese.

Summing up, we learn by the measurements that the Siṇhalese, Tamils, and Vęddás are three well-distinguishable races, and further, the measurements give much reason to suggest that the Tamils are more closely allied to the Vęddás than the Siṇhalese, which latter no doubt represent the highest race, whilst the Tamils in many respects range between the two others.

One result in any case is certain, viz., that the Vęddás are by far the lowest in the scale of the three races, not only in their habits, but also in their anatomy, and this fact confirms the opinion of those who claim the Vęddás as the remnants of an old tribe of Aborigines. We can pass over the customs and the religion of the Vęddás, because former writers have dealt with them, and the principal facts are generally known. We will call attention to one point only, because it illustrates clearly the primitive customs of this race, and that is the wearing of leaves as a cloth. A string is tied round the loins, and small branches are put underneath, till a thick belt of leaves is formed. This custom is now almost extinct by increasing civilisation, but almost every Vęddá, if requested to do so, will appear in a few minutes in his dress of leaves.

It is our intention at a later period to deal more exhaustively with the anthropology of Ceylon, and to illustrate our writings by maps and photographs. We therefore confine ourselves in the meantime to these preliminary notes.

## II.—ZOOLOGICAL.

As zoologists, our labours in Ceylon were naturally devoted to the study of animals. Before we came to this Island we had set ourselves the special task to discover the development, then entirely unknown, of *Epicrium glutinosum* — *Coecilia glutinosa* (Linn.). This is a kind of ground snake, living in the tropics of the East, and known long since; the shape of the animal is like that of an eel, one to one and a half feet in length, dark brown in colour, with two yellow side-bands. The skin is lubric, like that of a frog or a salamander. It lives under the surface soil near rivulets or ponds, in cavities which it digs for itself. Its eyes are small; there are no feet. Two tentacles, which are at the top of the snout and are retractile, are very remarkable; further, the skin is particularly interesting, because there are imbedded in it numberless very small round scales like those of fish, but invisible from the outside, and also different from the fish scales in their finer histological composition. The genus *Epicrium* has some few relatives in America, which bear the old name of the whole class, viz., *Coecilia.*

It is but natural that this animal should excite the greatest interest of naturalists, and that many efforts have been made to arrive at a clear knowledge of its position in the natural system. The conclusion arrived at was, that it ought to be ranged under the order of the *Amphibians*, and not, as it was supposed formerly, under that of the *Reptiles*, especially of the snakes. Later on, as there have been found different anatomical peculiarities which pointed out a somewhat isolated position of the animal, it was raised to a special order, that of the *Assoda*, and was put in the lowest rank of the general class of the *Amphibians.*

We know from experience, that if the position of an animal in the natural system is not clearly understood, its development throws light upon the question, the animal in its development showing the traces of those forms which it had to run through, according to the theory of evolution, to arrive at its present form. We know, for instance, that the well-known water-salamander (*Triton*) is an animal which for some time of the year lives on land, and breathes through lungs; it lays its eggs in the water, and out of them come forth larvæ, which have at each side of the head near the ear a bundle of gills. Feeding in the water the animal gradually obtains lungs, the gills atrophying, and finally dropping off; it then seeks land, and breathes air. Now, the question is this: Does *Epicrium* show the same mode of development as the water-salamander, or not?

It was known that the order *Epicrium* has been found living in the water, and at each side of the head, where gills were expected to be, they had little openings. But this was all that was known about the development of *Epicrium*. Here began our work. It was evident that we had two suppositions: Either, *Epicrium* lays its eggs in the water, and there the young ones take their development (as is the case with the salamander), or *Epicrium* is viviparous. So we carefully examined all ponds and rivers in the vicinity of which we found the full-grown animals, but though we often met with young specimens living in water, with a gill-hole at each side of the head, yet we never found gills, but always well-formed lungs; earlier stages did not come to our notice. So we began to dissect the full-grown animals, and to examine them for embryos; we opened about a thousand females, yet we never obtained the result so much wished for. At last a cooly brought a little lump of eggs, which he had found in the ground near a rivulet, and from this moment the mode of development was discovered, which generally proceeds in the following manner:—The pregnant female forms in the soft damp soil at first a small globular cavity, and deposits there a lump of about thirty pretty large eggs, connected with each other by a sort of string. The mother curls herself round the eggs, and broods probably in order to keep them damp with her body in the case of sudden drought. The eggs are of the size of a very large pea, and yellow, bearing a close resemblance to those of reptiles, the lizard for instance; in size, therefore, they cannot be compared to the eggs of a frog. In such an egg an embryo develops, which is especially interesting owing to the circumstance that behind the eyes, on the same spot where the salamander has them, three long gills are growing, of which one is directed forward, one upward, and one backward. The gills have the shape of ostrich feathers, and as they are red like blood, the embryo, after being artificially freed from the egg, looks really pretty. Its colour is black, but the yellow yolk adheres to the belly. This shows that the *Epicrium* whilst in the egg passes through the same stages which the salamander passes through in the water. In the salamander, the reason for gills is clear: they serve the young animal to breathe in the water like fish; in *Epicrium*, the gills are as well formed as in the salamander, but as they are not required to act as breathing organs under water, their existence is not so easily understood; yet they are perhaps of some importance as organs of breathing of the embryo in the egg. The embryo remains in the egg for a very long time, until it reaches the size of about six to seven centimetres; it also moves rapidly if at that time it is artificially freed and put into water. The next thing we observed was the young *Epicrium* living in water with two gill-holes, but without gills; the size of the youngest was only a little larger than the full-grown embryos. It is therefore certain that the embryos break the shell of the egg, strip off their gills when wandering through the soil to the water, and live for some time in water with simple gill-holes and lungs, which had developed already in the embryonic stage. A young *Epicrium*, or so-called larva, when living in water comes from time to time to the surface to inhale air. By and by the gill-holes close, the young animal appears on land, and no more leaves it; when put back into the water it is soon drowned.

It now would no longer be correct to assign to the *Epicrium* the lowest position in the natural system amongst *Amphibians*. The *Epicrium* has generally the same development as the salamander, and has therefore its position quite near the latter. The salamander belongs to the *Amphibians* with a tail, in contrast with the frog, which is a tailless *Amphibian*. The *Epicrium* was considered to be without a tail; in the full-grown specimen, however, a trace of a tail is discernible, and the embryos show clearly a short tail with a well marked fin. These are the main features of the development of *Epicrium*. There are many other points of interest, but they come more into the scope of a specialist, and could not be explained in a short paper and without the aid of drawings, and they will have to be dealt with accordingly at a later period.

The chief results are briefly—

(1) *Epicrium* (like *Coecilia*), on the basis of its anatomy, cannot be placed in any known group of Amphibians.

(2) Its embryonic evolution passes through the same stages as the salamander as a larva.

(3) In consequence, *Epicrium*, notwithstanding its very different appearance, has to be classed as the nearest neighbour of the salamander.

The researches just referred to occupied us about eight months at Péráde̤niya. We then proceeded to Nuwara Eliya to begin studying the *rain-worms of Ceylon*, both from a histological and a systematic point of view. The hills of Ceylon are of special interest in possessing quite a gigantic species of rain-worm, which attains a length of about four feet, and a thickness of a big thumb. We hoped to find other similar species, but we met only with smaller kinds that were new, amongst which were a beautiful blue-ringed one of rather large size, and many smaller ones of less striking appearance. Ceylon being an island long since separated from the continent, those animals living in the soil, as they are, must be of a peculiar interest, and an exact systematic examination of the rain-worms of Ceylon might induce an investigation of those of India. The comparison of the forms in both countries promises valuable results as to the range of geographical distribution ; it might also furnish a further basis for speculation about the changes of the continents and islands in the course of time. Now, it is true that the rain-worm is very easily transferred in many ways ;

we know already, that upon the different elevations of the hilly zone of Ceylon, different forms are found which are not to be met with in the low country, and which represent probably similar endemic forms, as for instance amongst the lizards in *Ceratophora* or *Cophotis*. It is not the place here to enter into our anatomical and histological examinations of these animals, as they are of too special a scientific interest; but we may mention that a considerable portion of our labour was directed towards the examination of the vascular system of the rain-worm, which we tried to investigate physiologically.

A result of more general importance, which we obtained by histologically examining the skin of *Epicrium* in Pérádeṇiya, and that of the rain-worm in Nuwara Eliya, is the following:—

The body of every animal, with the exception of the lowest order, as the animalculæ, &c., is surrounded by a more or less thin layer, the so-called epidermis: it is not homogeneous, as glass for instance, but composed of innumerable very small corpuscules, the so-called cells, which are arranged like paving stones. Just under this epidermis the finest branches of the blood vessels are spread like a net. The same is the case in the lungs, and as here the blood comes to a very near contact with the air, it absorbs oxygen and returns carbonic acid; that is the process we call breathing. As the blood is separated from the outer air by the above-mentioned fine skin, the epidermis, the receiving of oxygen and returning of carbonic acid was explained as possible by the physical law of diosmose. But further it was observed that the different cells of the epidermis do not adjoin each other, but that between them a number of cavities exist, and the cells themselves are connected with each other by exceedingly fine communicating filaments. The outer layer of the body was found therefore to be not solid. In the *Epicrium* we observed that from the finest vessels just underneath the epidermis, little tubes ascended outwards, which after having reached the epidermis, divided into tiny arms like those of a chandelier, and these arms again were connected with the range of cavities between the cells of the epidermis. These cavities communicate with the surrounding medium; so we learned that the fluid of the vascular system communicates by means of the very fine tubes, and the cavities of the epidermis just described with the outside. The tubes are so small that even a blood-corpuscule is much too large to pass through; and further the blood-fluid, the so-called serum itself, cannot flow out of the skin, according to the law of capillarity. We pursued the subject further, and found a similar state in the gills of fishes, the skin of snails, leeches, and rain-worms. This discovery of a direct communication of the vascular fluid with the outer medium, obviates the use of the law of diosmose, and the process of breathing becomes more intelligible. It is to be hoped that injection into the vascular system may lead to a conclusive proof of our theory.

The next five months were devoted to travelling in the south-east of the Island, partly in search of information about Vẹddás, partly with the object to obtain an embryo of an elephant. His Excellency the Governor had the kindness to give us free permission to shoot elephants, with the special right also to kill females for the aforesaid purpose. But unfortunately our exertions in this latter direction were not successful. Three female elephants were killed, but none had an embryo. Part of the intestines of the animals has been preserved for future histological examination.

During our stay in Ceylon, we used to collect whatever seemed to be important, and thus a fair amount of scientific material has been accumulated, which will be dealt with in Europe after our return. Many new specimens which we were able to secure in the course of our stay we pass over here, because they have not yet been exhaustively examined. However, we shall briefly touch upon the chief results of our four months' stay at Trincomalee.

We discovered there two snails living as parasites on a sea-star. Until now only very few parasitic snails have been found. The most famous kind is *Entoconctra mirabilis*, which lives in a holothuria, and is an animal that in appearance is only with difficulty to be distinguished from an intestinal worm; but its eggs develop fully-formed young snails with shell, feet, and eyes. This is a new example to show how impossible it is in many cases to understand the systematic position of an animal without the knowledge of its development. The snails examined by us are not so extraordinarily deformed as the *Entoconctra*, yet they have many characteristics. Our two snails are quite different from each other: they are also living on different parts of the sea-star. The one which inhabits the interior of it is about a quarter of an inch long, and has a well-formed somewhat hard shell. Where it dwells, the body of the sea-star is inflated to a spherical cavity, and when the apex of the shell touches the skin of the sea-star, a little hole is formed, which through the interior of the cavity is in communication with the outside. The snail can hardly move, and thus lives like a captive in his cell. The most remarkable feature is, that the mouth of this snail, which is small in other species, is extended into an enormous proboscis, almost twice the length of its body. This proboscis is immovably connected with the inner side of the body-cavity of the sea-star, and through it the snail sucks the fluid of the sea-star as its nourishment. Underneath the shell the snail has a gill, and for breathing it requires sea-water; this streams through the above-mentioned hole into the cell of the snail. The water for breathing has constantly to be renewed, and to render this possible, the following apparatus serves: At the root of the long proboscis rises a bell-shaped muscular fold, which rests with its inner side against the shell of the snail, with the outer side against the wall of the cavity, and which is so large that it covers the shell completely. We have not watched the function of this muscular bell, but we believe that it very likely works as a pump for constantly renewing the water in the cavity. This snail is most probably to be ranked in the system near the genus *Hylina*.

The other snail lives not inside the sea-star, but upon its skin; its shell has the shape of a Phrygian. It is like the other, immovably connected with the sea-star, the base of its proboscis being enlarged to a disc, and this being connected with the skin of the sea-star by numberless little folds. It lives like the other on the body-fluid of the sea-star.

The sea-urchins are characterised by a globular hard shell, which is covered all over with spines. The regular sea-urchin has the mouth at the lower pole of the spherical shell, at the upper one the arms. Wyville Thomson was the first to discover a sea-urchin the shell of which was not hard but flexible like leather; the spines were quite short, only about a quarter to half an inch in length, and surrounded by a thick skin: thus they looked like little clubs. In later years a good number of other specimens have been brought up from the deep sea during the expedition of the "Challenger." In Trincomalee we were lucky enough to discover in a depth of four to six fathoms in the harbour, a beautiful new species of this group. The greatest diameter of the animal was about six inches; its height not quite two inches. The colour was a dark brownish black, and this ground was covered with small spines resembling clubs, in consequence of the skin around them. Besides, small azure corpuscles on stalks ran in radial lines from the upper to the lower pole, and adorned the sea-urchin like jewels. These corpuscles, as well as the other larger spines, have a most striking peculiarity. If the animal is taken into the hand you feel a pain as of about a dozen bee-stings, which lasts for some three or four minutes, then it ceases completely. The small spines as well as the blue corpuscles turn against everything that approaches, and from a more precise examination, the result we came to was, that, as is known to be the case with insects, every spine is provided with a peculiar bag of poison, the spine itself being hollow, and the poison flowing out of the bag through it into the wound; the blue corpuscles especially have round the bag of poison a fairly thick ball of muscular substance, and this contracts if the fine spine inside of the corpuscle penetrates into the skin. We have no doubt that a similar apparatus also exists in the other leather-urchins, but it has not yet been determined. It is evident that this soft sea-urchin would soon be destroyed by fishes of prey if it had not the formidable arms just described. This circumstance a small fish availed itself of; this little animal, which is in length about one inch, lived just between the spines of the sea-urchin, so that a pursuing fish could not come near it at all without being wounded by the spines of the sea-urchin; moreover, the little fish had the same dark brown colour as the sea-urchin, and was thus doubly protected.

Until now in no sea-urchin had a real eye been found. It was noticed that many had a very feeble perception of light; but it was impossible to state that they could really see. This is quite correct of the great majority of the sea-urchins; but in the geuns *Diadema*, which is very common throughout the tropics, we found most curiously composed eyes, somewhat similar to those of insects. As light blue spots they run round the surface of the black sea-urchin, like the above described blue corpuscles of the leather-urchin. Each of these blue spots consists of many hundred small crystal cones, which rest upon a layer of nervous substance. Microscopical examination had already shown that the blue spots were eyes, and the simplest physiological experiment confirmed it. If the hand is brought near the aquarium which contains the sea-urchin, without touching the water of course, the urchin at once directs all its long spines against it to protect itself; it sees therefore very well. Between the spines of *Diadema* a little fish lives, which is protected in this case by the length of the spines, while the above-mentioned one found protection in the poison-apparatus of its host.

During the last days of our residence in Trincomalee, a sea-urchin was brought to us, which both by its size and by the splendour of its colours quite surprised us. It was a foot in diameter exclusive of the spines, which were two to three inches long. Its height was about six inches; on the ventral surface were shorter and stronger spines than above. Its colour was brownish black, and over it ran from the apex downwards broad Saturn-red bands, which in the whole of their length were dotted with very large splendid azure spots; these spots we discovered to be eyes, as in the case of *Diadema.* This gigantic sea-urchin has up to the present no rival, as far as we can learn from the literature on the subject. Probably it was brought up from a great depth to the shore by the strong current of the north-east monsoon. Should it prove, after a more exact systematical examination, to be a new species of the genus *Diadema,* we would propose to give it the name of *Diadema imperator.*

# A BRIEF SKETCH OF THE MEDICAL HISTORY OF CEYLON.

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*(Read Nov. 18, 1886.)*

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## Introduction.

As I am to deal with a subject which is somewhat special, it is my natural desire, in expectation of meeting a mixed assembly, that my treatment of the contents of this Paper should be such as to prove interesting and instructive to non-professional as well as professional persons. To the professional part of my audience, the medical annals of this Island cannot but be replete with interest; and I trust that my other hearers will derive some useful information from an attempt to give an account of diseases which have prevailed in this country from the earliest period of which we have any record, the progress made by European medicine, and of the improvement in the sanitary condition of this Island effected during the present century.

Although the inhabitants of this beautiful Island have had a fair share of the "ills that flesh is heir to," it is satisfactory to know that the efforts which have been made by the officers of the Medical Service of this Colony, under the direction of an enlightened and beneficent Government, and by local self-governing bodies, for the improvement of the health of the people, have, through the blessing of a merciful Providence, been crowned with a great measure of success.

It is not my purpose to give you statistical details: these might add greatly to the value of the information contained in this Paper, but would detract from its interest. I shall merely give a statement of facts: and in taking a rapid glance at our past medical history, I will, in the first place, touch on the salient points connected with the native or Buddhist system of medicine; next, on the medical history of the Portuguese and Dutch periods, so far as learned from records at my command; and lastly, on the great sanitary reforms effected since the British occupation of the Island.

There is a mine of rich material worthy of exploration in the archives of the Civil Medical Department, dating from its separation from the Military Service in 1858; but I have been able only to make use of published records and of the Administration Reports and Sessional Papers of the Legislative Council from 1864, the period at which their publication commenced.

### SIṆHALESE SYSTEM OF MEDICINE.

In the early part of the third century B.C., Aṣóka was the great Buddhist sovereign of India. He propagated the new doctrines of Buddha by erecting columns or pillars, on which were engraved those memorials or edicts he was desirous of making generally known. These inscriptions are remarkable monuments of the sagacity and benevolence of that great sovereign, who erected viháras, monasteries, and hospitals, thus giving effect to whatever there is of beneficence in Buddhism.

From an early period, the priests charged themselves with the duty of educating children and relieving the sick. It was in Ceylon that the Buddhist doctrines were first reduced to writing. These doctrines addressed to mankind in general, besides inculcating the duty of reverence to parents, love to neighbours, charity and other moral precepts, recommended the prosperous and wealthy to found Refuges for the blind, the destitute, the crippled, the sick and wounded both of man and beast. This was taught to be the surest method of attaining to the highest degree of perfection and holiness on earth, by means of which the future reward of the Buddhist faith might be obtained, viz., *Nirváṇa*, or an easy departure and utter annihilation. These motives actuate some of the Buddhists to this day, and I have learned from reliable authority that the Buddhist contractor of the Planters' and Anthonisz Wards (Mahámarakkala Kurukulasúriyapaṭabęndigé Solomon Perera) has actually built these hospitals simply at the cost price of the materials, in the hope of obtaining merit here and *Nirváṇa* hereafter. King Aṣóka also recognised the sanctity which attaches to human life, and directed that the life of no living being was to be taken; and that wells were to be dug, trees planted, and *caravansaries* erected in public highways for travellers.

The medical houses, or hospitals, of that period, were to be provided with all sorts of instruments and medicines, consisting of mineral and vegetable drugs, and food; and skilful physicians were appointed to administer them at the expense of the State. Those physicians, or *Vedarálas*, who had gained a knowledge of Sanskrit, committed to memory stanzas, and recited them by the bedside of the patient. These stanzas were from the *A'yur-Veda*, a religious treatise on the science of life and medicine.

The *A'yur-Veda* (from *áyur*, period of living, and *ved*, to know, treating of the science of life and medicine) is said to have been first preserved by oral tradition in the form of hymns, prayers, and precepts. It is regarded as the most ancient and authentic book on Oriental medicine, next to our own Bible, and consists of one hundred lectures, of a thousand stanzas each, called *ṣlokas*.

Fragments only of the manuscripts are now extant. It was supposed to have been composed by Brahma, 900 B.C., and handed down to the Buddhists by the Brahmins. It was intended to teach the proper manner of preserving life, and the means of preventing and curing diseases. Dr. Wise, the author of the "History of Medicine among the Asiatics," says that it contained a description of the structure of the human body prepared from actual dissection, an account of the causes and diseases to which it is subject, the enumeration of many useful remedies, and precepts for preserving health and curing diseases. The works studied by our *Vedarálas* in Ceylon now, are the *Ṣastris*, *Charaké*, and *Suṣruta*, which are commentaries on the *A'yur-Veda*. The first is arranged in the form of a dialogue or conversations between *Atrya*, the master, and his pupils in their conferences. Sir Whitelaw Ainslie gives a list of twenty-one Sanskrit medical works, known in the early part of this century among the Siṇhalese and Tamil. There are no doubt several very intelligent and trustworthy *Vedarálas*, who are Sanskrit scholars, and study manuscripts on "olas," or leaves; but there are also a larger number of ignorant impostors in the villages, to whom the words of Job are applicable: "But ye are forgers of lies; ye are all physicians of no value!"

The Tamil books of medicine derived from the same source are published in the Tamil and other Dravidian languages. The Tamil practitioners are styled *Vayittiyan* and *Parikári*. The *Vayittiyan* of the Tamil people is largely engaged in treating infantile ailments, and many of them even confine their practice to children only of all classes, Muhammadans as well as Hindús. Those who take an interest in the Oriental system of medicine, and wish to pursue the study of the ancient Hindú, Buddhist, Arabian, and Chinese systems of medicine, will find a full account in Wise's "History of Medicine," published in 1867. The Moors or Muhammadans of Ceylon have their own native practitioners, who blend the Arabic with the Hindú systems of medicine. The recognised physician is called *Hakim*.

There were many kings of Ceylon who built hospitals and practised medicine themselves, and by their noble example made it an honourable profession. According to the *Mahá-waṇsa*, Buddha Dása, who reigned for twenty-nine years, from 339 A.D., was the author of a medical work called the *Sárártha Saṇgrahaya*. Many wonderful cures are attributed to him. He built hospitals for every ten villages, and placed medical men in charge of them. They were to receive one-fortieth of the revenue derived from fields for their maintenance. He also appointed medical men to attend on his infantry, and veterinary surgeons to attend on cattle and elephants. Along the roads he built halls for the lame and blind. It is said that "When he went out of the palace, his surgical instruments were always in his waist, and he operated upon all sick persons whom he met." King Agbo, who reigned six years, from 782 A.D., caused medicines to be distributed among the sick; and Dappula II., who commenced his reign in 795 A.D., is most highly spoken of in this respect, in the following words: "That most gracious Prince built a hospital at Polonnaruwa. He also in like manner built a hospital at Pandaviya, and endowed it with villages which yielded the necessaries of life. He also built in several places halls for the cripples and the blind. In short, he did not leave anything undone which was called meritorious; he even gave growing paddy crops to cattle, and rice, mixed with honey and sugar, to children."

Parákrama Báhu, who reigned from 1163 to 1196 A.D., built a large hospital capable of accommodating hundreds of patients, and appointed a manservant and maidservant to attend on each patient for the purpose of supplying him or her with necessaries of life and medicine. He ordered medicines and the necessaries of life to be made and stored in the hospital, and appointed skilful and salaried medical men to attend on the patients. Divested of his royal robes, he visited the hospital four times a month, and inquired into the nature of the disease of each patient, and the mode of treatment adopted; and whenever the treatment was in his opinion erroneous, he taught the physicians the proper method, and attended himself to some cases.

When the patients recovered, he distributed clothes amongst them. This prince is said to have cured a crow of a tumor, and the bird, it is stated, would not leave the hospital until attended to! Nor was sanitation ignored. King Pandukábhayo, who reigned 437 B.C., employed one hundred and fifty men to carry dead bodies to the cemetery, and one hundred and fifty men as cemetery-keepers and sextons, besides two hundred night-soil men, a small number of day and night guards, and a small army of sweepers.

## PORTUGUESE PERIOD.

In the history written by a Portuguese author, Juan Ribeyro, in 1685, there is only a very brief description given of the diseases which prevailed in Ceylon at that period, and I can find no allusion to the methods of treatment adopted by medical men of his own nation. The Portuguese priests and captains of companies appear to have been in medical charge of the garrisons of Colombo, Kalutara, Negombo, Batticaloa, Trincomalee, Jaffna, and Maṇṇár.* Ribeyro states that most of the Portuguese on their first arrival were subject to bowel complaints, fevers, and other diseases, to which the natives are not liable. He thought that the Siṇhalese retained their health by frequent baths, and states that when he first came out to Ceylon he had two illnesses in the first two years. He then adopted the native habit of bathing twice daily, and during the sixteen subsequent years he lived here he never became ill. Frequent bathing is acknowledged to be one of the best means of preserving health, and is practised by the natives to this day; but it is in strange contradiction to the experience of an old colonist of 70 years, an Italian, now dead, who attributed his immunity from disease to his *never* bathing!

Ribeyro describes "beri-beri" *(bére-bére)* as a disease to which Europeans were very liable. He recommended as the best remedy pork and biscuit, with palm wine (toddy) and smoking, to be persevered in for three months. As a prophylactic against this disease, the Captain General Antonio de Mascarenho issued an order for every one in the camp to smoke.

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* A correspondent points out that Le Grand has not followed Ribeyro accurately here. "It is not strictly correct to say that the Portuguese priests and captains of companies appear to have been in medical charge of the garrisons of Colombo, &c. Ribeyro (Bk. I., chap. xiii) distinctly says that when the soldiers were seriously ill they were sent to the hospital at Colombo, and that the surgeon had to certify the necessity of this: Le Grand omits this statement."—*Hon. Sec.*

Ribeyro only briefly alludes to "Paraṇgi" disease *(Paraṇgi leḍa)*, that unsightly and disfiguring skin disease which prevails to this day in the districts of Mullaittívu, Vavuṇiya-Viláṇkulam, Anurádhapura, and Kurunégala. He called it the "Neapolitan disease," named by the natives "*Paranguelere*," or "Portuguese sickness," since the Portuguese first introduced it into this country; and he says it "is not easily cured."* Fever is only mentioned, to be dismissed with its remedy, viz.:—a decoction called *coantru.*† Those who know Portuguese are aware that the remedy is a common and useful one, employed to this day. Coriander seeds boiled down with ginger into a decoction is commonly used in the cold stage of ague, and in catarrhs and colds in the head. Ribeyro states, as we can bear testimony even now, that no people understand the use of simples better than the Siṇhalese, so that with a few herbs or roots they cure wounds, ulcers, and swellings; but it is extravagantly stated that they set broken arms and fractured legs, and put those matters to right in a very few days. He also noted the good effects of herbs as antidotes against the bites of snakes and venomous insects. We must admit that many *Vedarálas* are good bone-setters, although they have no proper appliances for preventing shortening of broken limbs. Their method of stuffing a wound and keeping it dilated, when it is connected with a compound fracture (although aromatic, antiseptic, and astringent herbs are used to check bleeding and prevent putrefaction) cannot be approved except as a temporary measure, until proper surgical aid is obtainable. The historian must have been deluded, when he was induced to believe that cancers, which are considered incurable in Europe, were cured in a week in Ceylon. Ribeyro also alludes to the prevalence of small-pox, which the natives called "*ankaria*, or an affair with God," because it appears as if only a miracle can cure it.*

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* The writer quotes Lee's translation of Ribeyro, which is merely Le Grand's version Englished. Ribeyro's actual words are :—"As *mal gallico* chamao *Parángue rere*," &c.—*Hon. Sec.*

† Ribeyro, "*coentro.*"

The following sketch of the mission of Padre Vaz, a Portuguese Priest in Ceylon, who died in 1711, is taken from a Portuguese work written by Padre Dorego :—"The small-pox now visited Ceylon, and made fearful ravages. The people believing that all persons labouring under the disorder were possessed by the devil avoided them, as they would him ; the father ran away from his children, the wife from her husband, leaving them to perish without food : the sick perished, therefore, as much from hunger and panic as from the virulence of the disorder. The dead became so numerous that they were left unburied, or carried to distant places, while the poor wretches affected were driven by the Government into the jungle. When the contagion had reached Kandy, the king left it, as the stench of the dead bodies in the streets was unbearable. *Vaz* resolved to visit both Christians and Pagans, and being with provisions from his followers in Colombo, relieved their distress. He also followed the sick into the jungles, and building huts as well as time and place would permit, there sheltered them from the elements and the attacks of wild beasts : in a word, he contrived to supply every want, temporal and spiritual, performed the most menial services, opened hospitals in the deserted houses, and dared everything for their relief. The result was that members who were saved joined the Church, and had their children baptized. Ribeyro's editor, Le Grand, speaks of the habit of betel chewing among the natives, Portuguese and Dutch; he thinks it a wholesome practice, which purifies the breath, strengthens the gums, and cleanses the bowels. The Siṇhalese at that time attributed their long and healthy lives to its use, and Ribeyro confirms it by saying that men and women were seen in Ceylon who had not lost a single tooth. We unfortunately know that the practice of betel chewing presents another side; it produces "betel-chewers' cancer."

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* The same correspondent writes :—"This is Le Grand's statement. Lee in his translation of Le Grand did not attempt any explanation of this wonderful word *Ankaria :* what Ribeyro really wrote was *Deanécharíya*, *i. e.*, *Deviyankâriya*. Le Grand apparently mistook the first syllable for the proposition *de!* (I may mention that I possess the MS. of Ribeyro's narrative used by Le Grand, and that it reads *deancharia ;* in this MS. the words are run together very much, so that there was some excuse for this blunder.)"—*Hon. Sec.*

## DUTCH PERIOD.

The Leper Asylum at Hẹndala is perhaps the only monument of the medical history of Ceylon during the Dutch period which is left to us. There is no authentic record of its foundation beyond an inscription on a stone, "Anno 1708," and a monogram scarcely decipherable, indicative perhaps of date of building and of the original owner of the property on which the institution stands. It is generally believed, on traditional authority, that it owes its origin to a philanthropic Dutch lady, daughter of a Dutch Governor, who was herself a leper, and at her death left the property to Government, in trust for the pauper lepers of the Colony.

In a memorandum made by Governor Van Imhoff in 1740, he commends this institution to the care of his successor. Although frequent search has been made among the archives of the Government Record Office for documents or information relating to the transfer, nothing has come to light to show how the Government became possessed of a property sixteen acres in extent, occupying one of the most beautiful sites in the neighbourhood of Colombo, at the mouth of the Kẹlani river, admirably adapted from its situation, isolation, and distance from town for the segregation and treatment of lepers. This hospital was certainly the first in the Colony founded by private benevolence, and supplemented only of recent years by the foundation of other charitable institutions, especially at the hands of the De Soysa family. In this Asylum, which has separate wards for lepers, and paupers suffering from incurable diseases, one hundred and forty-four remained at the end of 1885 and sixty-five were admitted during the year 1886, making the total number treated two hundred and nine : one hundred and ninety-seven lepers and twelve paupers. The patients treated in this institution, one hundred and seventy-six at present, are well cared for, and all that science and humanity can suggest is adopted for their comfort and happiness. The new wards are the finest of any in the Island, well built and well ventilated.

There is no certain information available with regard to the state of medical practice in this Island during the Dutch period, extending from 1656 to 1795. It is reasonable to suppose that there were army surgeons among the Dutch, as under the British, and that some of these were probably regularly qualified men from the colleges of Amsterdam, Utretcht, and Leyden,—with the latter of which the name of the great Boerhaave will ever be connected. There may have also been one or two civil practitioners, and these may have been assisted by young men of the country, who helped them behind the counter, and picked up a knowledge of medicines and their application. Among the hospital dressers and dispensers of that day, there were many who attained a certain eminence, whose names are yet recalled by old residents, who can remember them " with a touch of affectionate pride." In those days the apprentice system was in vogue, and if there was no opportunity of walking the hospitals, there was, at least, for mixing and triturating drugs. Medical skill was empiricism, and although Stahl, Boerhaave, and Hoffman, with the ancient medical classics, might have been studied by a few old Dutch doctors who came to Ceylon, the probability is, that like the early British army surgeons, the Dutch doctors who came here were not university men. However, from the large number of those who took service under the British at the cession of the Island in 1795, it is evident that medical science had made some considerable progress in the Island, and that many native and Dutch descendants had applied themselves to its study.

Dutch physicians have been noted for their knowledge of botany, and the extensive field afforded in Ceylon for its study was an especialat traction. The flora of the Island was arranged and described by Linnæus, with the aid of the celebrated herbaria collected by Herman and Hartog, both of whom were sent out to Ceylon by the Dutch East India Company, in 1671. It is also interesting to note that the first European writer on tropical diseases was a Dutchman named Bontius.*

There are no records extant to show that any effort was made by the Dutch to teach the science of medicine systematically to the natives, but it appears that the kings of Kandy often requested through the Government the medical aid of Dutch doctors, which the Dutch Governor of Colombo complied with.

The mission of Doctor Danielsz and his apprentice to the court of Kandy in 1739, to cure the King Ṣrí Vijaya Rája-siṇha of a bad leg, as recounted in his journal, is replete with interest. The late Doctor Koch, in his introductory lecture delivered at the opening of the session of the Medical School in 1872, thus recounts the particulars of that memorable visit: "Doctor Danielsz went accompanied by his apprentice; but all he could see of his royal patient was the ailing limb. Under such circumstances it was impossible he could adopt any other course of treatment but what consisted of outward dressings. These he tried without any satisfactory results, and alarmed at the consequences of failure, he insisted on His Majesty taking a course of tonics. The decoction was prepared, but the king found it so bitter that he emptied the cup into the royal spittoon, suggesting that the doctor should employ the more agreeable article of arrack for the conveying of the nauseous potion. Doctor Danielsz hereupon brewed two bottles of bitters, but he prescribed so small a dose of it at a time (he calls it a small beer-glass full) that His Majesty demanded either a double dose or to be allowed extra liquor over the bitters; after a good deal of resistance the doctor was at last compelled to yield, and as he said he was himself in the habit of taking a *schnap* before meals, his patient also might, but positively not beyond the third day. In the meantime the leg was not improving, and the *régimen* was becoming intolerable, and so Doctor Danielsz was bid prepare to leave Kandy; and, if he could not congratulate himself on his professional success, we may yet suppose he was glad enough to escape the attentions of his patient, which now began to assume a form slightly more imperative than was altogether pleasant. So Doctor Danielsz and his apprentice returned to Colombo, and continued no doubt to adorn the profession till the natural close of his not uneventful life."

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* The same correspondent notes here :—" So far as I know, Dr. Vanderstraaten is correct in stating that Bontius was the first European writer on tropical diseases; but there was another medical writer on the subject, who followed not so long after, and whose work passed through several editions. I refer to Dr. Ægidius Daalmans, a native of Antwerp, who went to the East in the service of the Dutch in 1687, visiting Ceylon, Java, and India, and returning to his native land in 1689. Dr. Daalmans' book is very rare, the British Museum not possessing a copy."—*Hon. Sec.*

## BRITISH PERIOD.

Mr. Henry Marshall, Surgeon to the Forces, who served here from 1808 to 1821, has left us a valuable work on the "Medical Topography of Ceylon, and on the Health of the Troops employed in the Kandyan Provinces from 1815 to 1820, with brief remarks on the prevailing Diseases." From this work I have gathered some interesting passages. The troops employed during the early British occupation consisted of Europeans, Caffirs, Malays, and natives of India. Marshall says that the individuals of each class preserve a strong physical and moral resemblance, using the same food, having similar wants, undergoing the same labour, and suffering the same privations. Each class had particular prevailing diseases, according to the effect of the climate, exposure to malarious influences, and variations in their food-supply. The Europeans suffered from the endemic intermittent and remittent fevers, abscess of the liver, and dysentery, but they were greatly exempted from many diseases to which they are liable in their own country. A large number of British soldiers suffered from the effects of intemperance added to the effects of the climate, and no wonder when arrack was then retailed at sixpence a quart! It was Marshall's opinion that the regular issue of spirit rations engendered the desire for the immoderate use of spirits, and that frequent indulgence created a craving which had to be supplied. The same sad tale of spirit drinking, as one of the principal causes of sickness and mortality among the troops in Ceylon, is repeated in the Military Sanitary Report for 1864. Five per cent. of the troops were then reported to be confirmed drunkards.

Africans, called at that time "Kaffries," and who composed five companies of the 2nd Ceylon regiment, the remains of two other regiments 3rd and 4th, were chiefly recruits procured on the east coast of Africa, in the neighbourhood of Mozambique. A few of them were evidently children of Africans brought here by the Dutch. They made good soldiers, and were remarkable for longevity. They were habitually temperate; but the Malay recruits from Java and Sumatra, for the Ceylon regiments, were addicted to the use of bhang and opium. Although the immoderate use of these narcotics was nearly as hurtful as the free indulgence in spirits, the excessive opium eaters among the Malays were less numerous than the immoderate drinkers among the European troops. They were liable to intermittent fevers or ague when exposed to malaria in the jungle; inflammation of the lungs, consumption, asthma, and pocky-itch, so called by Mr. Marshall from the eruption leaving deep marks on the skin. The Indian troops, who formed the corps of Gun Lascars, the Pioneer Corps, and five companies of the 2nd Ceylon regiment, came from the Madras Presidency. They were a useful addition to the garrison, and were capable of much exertion when kindly treated. They were sober, temperate, and submissive, but extremely filthy, and owing to their neglecting to provide against sudden changes of temperature, were more liable to intermittent fever, inflammation of the lungs, dysentery, and diarrhœa; Malabar itch was, as may be expected, very common among them.

Distress was caused in 1812, 1813, and 1814 by repeated droughts resulting in failing of the crops of rice. It was deplorable, says Bertolacci, to see the numerous children of the Ceylonese families reduced and emaciated for want of food, and depending upon parents who were in no way able to provide for their large families. No substitute could be found for the staple article of diet for the native troops, and consequently privation and exposure led to much suffering. At Minery, between Kandy and Trincomalee, fifty-three men of the 19th regiment were attacked with fever, thirty-three died, and twenty recovered; but several of them had their constitutions much impaired. Of thirty-three artillery men, eleven died.

In December, 1820, there were thirty-two military stations in the interior, the chief posts being Kandy, Badulla, Aliput (fifteen miles east of Badulla), Ratnapura, Fort King and Kuruṇ̆égala, all of which were hospital stations. The Rev. Mr. Cordiner records that a small outpost in 1803, Koṭṭadeṇiya (thirteen miles from Kuruṇ̆égala), was so unhealthy that of seventy men of the 65th regiment who marched to it, every one was seized with fever, and within a month Lieutenant Hutchings and two privates were the only persons of the party who remained alive.

It will be interesting, before proceeding further, to glance at the nature and extent to which the principal diseases which existed in Ceylon prevailed in the earlier years of the present century, soon after the British settlement in this Colony. Davy considered the effects of the climate of Ceylon under three heads : "First, those which occur immediately; second, those which are produced slowly and gradually; third, those which arise occasionally and unexpectedly from the agency of peculiar causes. As to the immediate effects which result from the transition of the body from a temperate climate into a tropical one, we have ample evidence derived from the accounts of voyagers; such as disagreeable sensation of heat, acceleration of the heart's action, increased perspiration, langour, restlessness, and thirst, diminished appetite and general indisposition"; but these do not constitute actual disease, nor do they necessitate active medical treatment. "Europeans landing in Ceylon are liable to few ailments due to immediate causes." Prickly heat (*lichen tropicus*) is perhaps the most common. "During the wet seasons," says Percival, "the Ceylonese are subject to a variety of diseases. Every man is here his own physician, and the mode of cure adopted is of course very simple. A plaister of herbs is applied to the part affected, and I have seen the same remedy applied to a man in a high fever, when his whole body was daubed over with this ointment. A skill in medical herbs is almost universal among this race, and they have a variety of prescriptions for curing diseases by their application. This knowledge is owing to their peculiar fondness for gardening, rearing all sorts of plants, an employment in which they are engaged from their infancy, and it is from among them that the European gentlemen are anxious to procure their gardeners."

Small-pox seems to have been, as it still is now, the most dreaded disease. It has doubtless been the one great cause of the depopulation of the Island, and Forbes thinks it was this visitation which was described as the "red-eyed demon of pestilence" that swept the country of half its people in the third century, under the reign of Şrí Sangabo. It is called *mahá ledda*, or "the great sickness," and is believed to be "a direct infliction of the gods." Percival states that persons dying of this disease were considered accursed, and that, viewed as a means of God's vengeance, no attempt is made by incantations and exorcisms, as is done in other diseases, to propitiate the gods. Even the rites of burial are denied, the body of the dead being removed to a distant jungle, and then left covered with bushes and branches of trees to decompose. The goddess *Pattini* is believed to have the peculiar power of averting or preventing small-pox, and to her is dedicated a temple situated in the forests on the side of Ambokkekanda, where also stands the remains of Raŋgula Nuwara.* Pridham relates that during the prevalence of small-pox at Mátalé, the *Kapurála*, or lay priest, of Ambokké, was in constant request, and reaped an abundant harvest from the terror and superstitions of his neighbours. Every village in the vicinity of an infected place, by means of presents nominally offered to the goddess, but the most valuable of which were appropriated by the *Kapurála*, procured his presence; and the relics from the temple, consisting of a shield and bangle (amulet), were borne through the village followed by all the inhabitants, and duly honoured by the noise of every tom-tom, pipe, shank, shell, or trumpet which they could procure. The *Kapurála* had been at a former period afflicted with the natural small-pox, and was shrewd enough to have his whole family vaccinated, though his supposed temerity in visiting infected villages, and his good fortune in escaping contagion, were accounted for by himself, and believed by the people, to arise from the protection of the goddess. His influence was hence considerable, and his selfishness led him to use every secret means of checking the progress of vaccination among the dupes, by whom he was enriching himself.

Active measures in the prosecution of vaccination, the introduction of legislative measures to help on this good work, and to enable those in authority in the exercise of a wise discretion to isolate and effectually segregate the infected, have diminished the horrors of epidemics of this disease, and in the present day a scene like the following, as described by Forbes, cannot be expected to occur: "I found," he says, "lying in a field, with her head close to a well, the body of a woman who had but lately expired. Tormented by thirst and deserted by her friends, she had crept to the water, whilst in the last agonies of this loathsome disease. By permission of her relatives I offered her property, including a portion of land, to whoever would bury the body, but all my arguments and entreaties would not induce anyone, even the most wretched pauper, to acquire a competency by burying it."

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* See R. A. S. Journal, No. 29, 1884, pp. 368–394.

Cholera, as an epidemic disease, has at different times made fearful havoc in the Island. Marshal states that epidemic cholera having prevailed in 1817 in India, broke out at Jaffna and Maṇṇár in 1818. It subsequently appeared in Kandy, Colombo, and other garrison towns, a few only of the smaller outposts in Sabaragamuwa, &c., escaping the infection. One of the earlier outbreaks occurred in 1832, at Trincomalee, when it decimated the detachment of the 78th Highlanders at that time stationed there. A very eminent medical man, who had examined the military building at Trincomalee at this time, gave the late gallant Admiral Sir John Gore, his opinion in the following emphatic words:—"The position and construction of the barracks are admirably adapted for originating, and the hospital for maintaining, disease." Subsequent and later epidemics will receive notice under their respective years of occurrence.

*Berry-berry*, *beri-beri*, or *bere-bere*, prevailed in Ceylon during the earlier part of the present century. It receives notice from Percival (in 1803), who states that it was occasioned by "the low diet and bad water which the natives are accustomed to use, and in part, perhaps, by the dampness of the climate in the wet season. It swells the body and legs of the patient, and generally carries him off in twenty hours." In his time the plan of treatment was to rub the patient over with cow-dung, oil, chunam, lime juice, and other preparations from herbs, and then bury him up to the chin in hot sand.

I shall now attempt a cursory notice of the principal events in the medical history of Ceylon, gathered from official documents.

Vaccination was introduced into Ceylon as early as 1802. According to Bertolacci, who wrote in 1817, the population of Ceylon eight or ten years prior to that date was calculated at 700,000. The number vaccinated between 1802 and 1812 was 221,082, and it is stated that the efforts of the British Government to eradicate small-pox by means of vaccination were so successful that for eleven years the disease did not occur in Ceylon. The low-country Siṇhalese, when they found by experience the protective benefits of vaccination, crowded into the British settlements for the purpose. The Kandyans, or natives of the hill country, who had been at enmity with the Portuguese, Dutch, and British, still kept aloof from communication with the Maritime districts; but, though they did not acquire the direct benefits of vaccination, they were free from the disease when it had been eradicated by the prophylactic in the low country. They used to drive their small-pox patients into the jungles of the low country.

In 1803, Mr. Percival, an officer of the 19th regiment, suggested that vaccination should be made compulsory (sixty years afterwards, in 1863, it was made compulsory by Sir Charles McCarthy); in 1837, Dr. Kinnis, of the Army Medical Department, wrote a long letter to the inhabitants of Ceylon on the advantages of vaccination. It was translated into Siṇhalese, and must have done much good in making the benefits of vaccination generally known.

The first mention of the Lunatic Asylum occurs in the speech of Sir James Stewart Mackenzie, delivered before the Legislative Council in 1839. Up to that time insane persons had no special hospital provided for them, the common jails, and for a period, the Leper Asylum at Hendala, being used for their safe custody. In "earnestly pressing for adoption," the draft of "An Ordinance to establish Lunatic Asylums," His Excellency said that "the cases of distress and misery from time to time brought to the notice of Government, prove beyond a doubt that the time has arrived when it has become imperative for the protection of those unfortunate persons, and, in some cases also, for their maintenance and support." Not long afterwards, under the *régime* of the same Governor, arrangements were completed "for the purpose of receiving those unhappy lunatics, who," to use Sir Stewart Mackenzie's own words, "are rather numerous, and from various parts of the Island are now boarded, lodged, fed, and taken charge of at a much larger expense than if they were under one superintendent for the males, and another for the females, in buildings contiguous to each other. All this is now done in a most unsatisfactory manner in respect to health, cleanliness, and every requisite for such an establishment."

The cost of converting the small-pox hospital at Borella into a lunatic asylum was estimated at £2,000, and this alteration was ultimately carried out satisfactorily. Since then this building, which was added to and enlarged from time to time, served the purpose until growing needs and advance in sanitary science, led to the adoption of a fresh site and improved architectural plans for the present new asylum situated at Jáwatta. There are now 353 patients in the old and new asylums. On the opening of the Borella Asylum, in 1847, the Government placed the institution under the medical care of a specialist, Dr. Davy, who was sent out from England. The appointment, however, on being subsequently vacated by him, passed into the Medical Department, Mr. Ebert being appointed to the post in 1849. Under the care and supervision of successive officers of the Civil Medical Department, everything possible was done that could conduce to the comfort and well-being of the unfortunate inmates.

The administration of Sir Stewart Mackenzie, and the year

1839, was further marked in medical annals by the first mention in His Excellency's speech to Council of a Medical School for Ceylon, and of certain measures to be adopted by Government, which afterwards contributed in a very great measure to the efficiency of the Civil Medical Department.

His Excellency then said :—"The evident inadequacy of the former rates of salaries, to ensure the services of persons duly qualified in point of professional attainments and general respectability, left no doubt in my mind of the necessity of increasing the remuneration of the native medical establishment; and while a higher scale of salaries was introduced, steps were taken to ensure to the junior members a regular course of instruction, both by the Military Medical Officers serving in the Colony and at the Colombo Academy. I also took advantage of the means of education Calcutta afforded to medical students, by sending certain more advanced youths to be educated there at the expense of this Government, with a view to employment in the Colony on their return. The Home Government has directed me to submit to you these arrangements, involving as they do an annual expenditure of about £3,500. It is for you, gentlemen, to declare whether this Colony does not stand in need of an efficient class of medical practitioners." His Excellency, in alluding to the necessity of a School of Medicine, added that he hoped the time was not far distant, when he should be able to propose to his Council, in furtherance of his views for the improvement of the class of medical men in the Department, the establishment of an Anatomical School; and it was even suggested that certain alterations might be effected in the late Pettah Hospital (at present the headquarters of the Ceylon Light-Infantry Volunteers) for this purpose; or failing this, that Her Majesty's Government would sanction "there being attached to the Colombo Academy such a system of medical education as will provide the means of adequate instruction in the medical profession in future for the Colonists, without their leaving their native

Island." Sir Stewart Mackenzie predicted what has been fulfilled. "I need scarcely add," he said, "that if these measures are successful, they will become the means of opening to the inhabitants of the Colony a new and most useful branch of professional employment."

Very few are now alive, who, under the designation of "Medical Sub-Assistants," served under Military Medical Officers, heads of the old Department. One of the earliest lists of the officers of the Civil Medical Department which I have been able to find is that for 1817. Between this date and 1858, when the Civil Medical Department became a distinct establishment, a large number of individuals, natives of the country, were educated and trained under Military Medical Officers. Many of these Military heads of the department appear to have been as kind-hearted as they were eminent for their scientific attainments, and the members of the subordinate department who still survive speak with a respect and affection of Forbes, Stewart, Barclay, Kinnis, Rowe, Ferguson, Templeton, Cameron, Fleming, and others, who, while ruling the department wisely and well, took a personal interest in the welfare of their subordinates.

Dr. Kevett, in 1835, was the first who attempted to organise a medical class. His pupils were the late Mr. Ferdinands of Kandy, E. F. Kelaart, P. H. Van Cuylenburg, M. B. Misso, Trask, Cleveland, and Ebert of our service. Of this number, Kelaart having obtained the opportunity of a free passage to England, as surgeon's assistant, accompanied the 78th Highlanders, and returned with a Commission as Staff Assistant Surgeon in 1840. Dr. Kelaart may, therefore, be considered as the first Ceylonese who acquired a British Medical degree; and his career as a physician and a naturalist was distinguished. His work "Prodromus Faunæ Zeylanicæ" is a monument of his talent and industry.

The slight attempt at imparting medical knowledge which I alluded to, was shortly after followed by a regular class for the systematic teaching of the science of medicine under Staff Assistant Surgeons Templeton and Cameron, under the supervision of Dr. Arthur Stewart. The lectures delivered were mere explanations of the contents of text-books. This plan of educating medical officers was but partially successful.

The clinical teaching at the Military Hospital, Colombo, not being found to answer as fully as desired, the Government determined to send students to Calcutta for their medical education. It was not until the beginning of 1843 that graduates of the Bengal College joined this service, and among them may be specially mentioned the names of Drs. Anthonisz, Loos, Dickman, Kriekenbeek, Ondatjee, Andree, Wambeck, Markus, Margenout, and Breechman, who have all, either by death or retirement, now severed their connection with a department they served honourably and usefully, the first two having had the distinguished privilege, upon more than one occasion, of administering the Medical Department, during the temporary absence of its head from the Island. Speaking of his predecessors, Dr. Koch, himself a graduate of Calcutta, says in his lecture: "Nothing conduced more to familiarise English practice amongst the natives of the Island than the services of these young men on their return. They undertook and performed with success the most formidable surgical operations, and the name of Dr. Anthonisz will always be connected with the first successful cases of æsophagotomy and ovariotomy in Ceylon. Indeed, if I am not mistaken, the first-mentioned operation was the first successful one of its kind ever recorded in the whole annals of British surgery."

Dr. Ondaatje was Acting Superintendent of the Royal Botanical Gardens at Péràdeniya in 1843–44, before the appointment of Dr. Gardener, and he has since given proof of his intimate knowledge of the productions of the country, and their economic uses, in his contributions to the Journal of the Asiatic and other societies.

Much attention was devoted in 1852, during the administration of Sir George Anderson, to the operation of the quarantine laws, and the improvement of the drainage system of the capital. That pestilential ditch in the Pettah, misnamed "St. John's River," was entirely covered in, several new streets were opened, drainage on an extensive scale was planned, both by the opening out of new drains and the widening of old ones; indeed, at no great cost, much was done to increase the salubrity of the town and the comfort of its inhabitants.

Various sums were from time to time voted by the Government of Sir Henry Ward for the improvements of Civil Hospitals. The state of the Pettah Hospital, then the General Hospital of Colombo, was not creditable to the Colony, and a sum of £3,000 was voted for the purchase of a better site in the suburbs. It was after this that the present General Hospital was built, and opened in 1864.

In 1857 a Select Committee was appointed by the Legislative Council to report upon the Fixed Establishments of the Colony, and one of the recommendations made was that the Civil Medical Department should be separated from the Military Medical Department, and placed under the control of a Civil Medical Officer, as the existing Civil Department was insufficient for the requirements of the Island, and the military heads of the department were shifted too often for opportunities to acquire local experience. A Civil Medical Establishment was proposed, consisting of a Principal Civil Medical Officer, two Colonial Surgeons, eight Assistant Colonial Surgeons, and twenty-eight Medical Assistants, all with salaries adapted to secure efficiency and ability. Dr. Elliott, eminent in Ceylon as a public man, and well-known for his ability and philanthrophy, was in England when the report was published, and he lost no time in applying to the Secretary of State for the Colonies for the new office of Principal Civil Medical Officer. He was appointed, but his tenure of office was unfortunately too short to enable him to carry out several beneficent plans. He died, deeply regretted, on May 22, 1859.

In 1865 cholera broke out in a severe epidemic form at the pearl fishery, and rapidly spread to Trincomalee, Negombo, and Colombo. In the following year it occurred in all the principal jails, but with care and attention it did not spread, and there were but seventy-seven cases among prisoners, with thirty-one deaths. The visitation was of a sporadic character, until the close of that year, and then broke out severely in an epidemic form in the Northern Province. The whole of that Province was rapidly affected, but the disease established itself more particularly in the Peninsula of Jaffna ; 9,092 cases occurred in the Northern Province, 8,696 of which were in the Peninsula of Jaffna, and 473 proved fatal. The disease was so much on the increase at the close of the year that His Excellency Sir Hercules Robinson appointed a Commission to visit Jaffna and report upon the causes which led to the outbreak of cholera in that peninsula. The Commissioners worked with much zeal and assiduity, conducted their inquiries on the spot, and after personal inspection of the localities which suffered most severely, and examination of the leading and well-informed persons of all classes of the community of Jaffna, drew up a voluminous and valuable report, which was laid before the Legislative Council. The report consists of the history of the epidemic, the modes of treatment adopted, the customs and habit of life of the people as bearing on the epidemic, recommendations for the sanitary improvements of the town and villages of Jaffna, and measures of precaution to be adopted against future outbreaks. In the Northern Province 10,064 cases occurred during 1867, of which 6,862 died. The remaining provinces suffered comparatively little, the total in these being only sixty-three cases, with forty-two deaths.

In 1867 Sir Hercules Robinson ordered an inquiry into the causes of the depopulation of the Vanni, and this investigation, on the recommendation of Dr. Charsley, was entrusted to Dr. Loos, then Colonial Surgeon of Jaffna. The conclusion he arrived at, after a careful inquiry, was that the depopulation was due to malarious fever and to the prevalence of an inveterate skin affection, possibly associated with an hereditary specific taint, aggravated by insanitary conditions, and known in that district as the "Paraṇgi-disease." His report on this subject is well worthy of perusal. The duty entrusted to him was performed in such an efficient manner that he received the special thanks of the Government; and his report was submitted to the Legislative Council, printed and circulated among the members of the department and others. In accordance with his suggestions, new hospitals at Mullaittívu, Anurádhapura, and Vavuṇiya-Viláṇkulam were established for the treatment of cases of this disease. It was, however, at the special desire of Sir William Gregory that more extended efforts were made during the year 1872 to afford medical aid to those suffering from Paraṇgi; and Dr. Danforth, a very efficient medical officer, educated under the American missionaries, was placed at Vavuṇia-Viláṇkulam to study the disease, and afford aid to sufferers. Dr. Kynsey wrote a very elaborate report embodying the observations and experience of all the medical officers who had opportunities of studying this disease. He had a series of drawings made illustrative of the disease in its various stages, and presented it, through Government, to the Royal College of Physicians, London. Dr. Kynsey's report is among the Sessional Papers of the Legislative Council, and is a complete history of this curious and loathsome disease.

In 1870 a milder epidemic of cholera prevailed in the Southern Province. It broke out at Kattragama during the Hindú festival there, and followed the track of the returning pilgrims.

Whenever cholera is prevalent on the south coast of India, it generally finds its way into the Island through the medium of the immigrant coolies, who land at Maṇṇár and travel along the great Central-road to the Eastern Province. There are five immigrant hospitals along this road, where sanitary precautions are taken, and great attention paid to the comfort and health of the immigrant coolies on their long march from the coast to the coffee estates.

It was in 1869 that the new hospitals at Kandy, Gampola, Badulla, and Ratnapura were completed and occupied ; since then new hospitals have been erected in the towns of Galle, Mátara, Negombo, Mátalé, Kurunẹgala, Batticaloa, Puttaḷam, and Kalutara. These new hospitals have been constructed on the pavilion principle, each ward being a separate detached building, and the ventilation and drainage are satisfactory. The pretty little hospitals at Pánaduré and Márawila are gifts of the late Susew De Soysa, Mudaliyár, and the Lying-in-Home was built by Mr. C. H. De Soysa.

The year 1870 marked a new epoch in the medical history of Ceylon. To Sir Hercules Robinson belongs the credit of sanctioning the inauguration of the Medical School, which was raised to the dignity of a College in 1880, when the late Sir John Douglas, K.C.M.G., was Lieutenant-Governor.

Thanks to the liberality of one of our well-known public-spirited fellow townsmen, who granted a free site opposite to the Civil Hospital, this school now has a local habitation. Government voted a sum of R12,000 for the erection of a building on this site, which now contains lecture-rooms, library, anatomical, physiological, and chemical laboratories. Mr. Sampson Rajapakse's name has further been associated with this institution for the last thirteen years, as he is also an annual donor of a prize of R100 for the best student in Obstetric Medicine. The late Susew De Soysa, Mudaliyár, built the De Soysa Museum and Library, at a cost of R12,000

This College has been in existence for sixteen years and has prospered. Dr. Loos had the honour of being its first principal, and he vacated the office on his appointment as Colonial Surgeon of the Central Province in 1876, when the late Dr. Koch succeeded him. The untimely death of this talented officer in December, 1877, from the effects of a dissecting wound, is still remembered, and the handsome memorial tower erected by public subscription, to hold a valuable and massive clock, granted by the Government of Sir James Longden, will remain a monument to his excellence and usefulness.

We have now fifty-nine licentiates on our register, twelve of whom have succeeded in obtaining British qualifications. A number of hospital assistants from the secondary class are also employed all over the country.

The reorganisation of the Civil Medical Department in 1873 testified to the desire of Government to place it on a more efficient footing, and make it more useful to the Colony. The Administration Report for the year 1873 was the last furnished to Government by the late Dr. Charsley, who retired in 1874, but did not live long to enjoy his well-earned pension; he died at the Cape in 1880. It is impossible to avoid adding a tribute to the able and conscientious manner in which he discharged the duties of the high office which he held in this Island for a period of fifteen years. Dr. Kynsey succeeded him, and took up his appointment as head of the Civil Medical Department at the end of March, 1875.

Mr. Joseph Fernando, of Moraṭuwa, erected a building at Béruwala, and the late Mr. Harmanis Dias one at Baṇḍára-gama, in Rayigam Korálé, for outdoor dispensaries. The friends of Dr. Anthonisz have given us two comfortable wards at the General Hospital. Of 156,693 patients treated last year in the forty-five outdoor dispensaries scattered over the Island, 13,010 were attended to at the Béruwala dispensary, which was the largest number treated at any place during 1885.

This concludes a hasty sketch of the principal medical events of the Island. We have reason to be grateful to a paternal Government for the deep interest it has always taken in the health and well-being of the people, and for its efforts to remove and mitigate evils or causes of disease and mortality.

To the Legislative Council we are indebted for the liberal votes made from year to year for adding to the requirements and comforts of our hospitals, and providing for the sanitary condition of our prisons. That Government has as little to do with charity as with religion, is little remembered by the public of Ceylon. In England, hospitals and dispensaries are supported by voluntary contributions, and large bequests are made by the wealthy for their maintenance and efficiency; whereas in this country, the duty as well as privilege of the rich to provide for the poor is not recognised sufficiently. Beneficence is not without reflex influence on the benefactor. The good Samaritan, who gave pence to support his neighbour, and poured oil into his wounds, "showed mercy on him," and Shakespeare says of mercy:—

> * * "It is twice blessed,
> "It blesseth him that gives and him that takes."

It would be well if more of our well-to-do citizens followed the noble example of Rajapaksa, the De Soysas, Joseph Fernando, and Harmanis Dias. These are the true benefactors of the people.

The wise and judicious Ordinances which have been enacted may also be viewed in a sanitary light. I need only allude to the Ordinances on compulsory vaccination; for establishment of Municipalities and Local Boards of Health; restricting the use of opium and bhang; regulating the sale of poisons; Medical Aid Ordinance for the planting districts; for administration of village communities; regulating the sale of intoxicating liquors; registration of births, marriages, and deaths; quarantine; irrigation; contagious diseases; and for regulating pilgrimages; nor must I omit to mention the advantages we have derived from the appointment of commissions of inquiry on cholera, prison discipline, and on irrigation.

On the whole, I may say we have no reason to be ashamed of the medical institutions of this Colony. We have one Leper and two Lunatic Asylums, twenty-seven Civil Hospitals, six District Hospitals, and forty-five Outdoor Dispensaries. Our prisons are now model institutions, and while stringent measures are adopted by strict penal discipline to make punishment what it should be, a deterrent from crime, every endeavour is made to ensure the health and maintain the physique of the convict, and thereby render him fit for the hard labour he has to undergo. Juvenile prisoners have been long carefully separated from old offenders, and confined in a separate department of the prison; and an Ordinance has lately been passed for securing their reformation in a Reformatory, and in Industrial Schools. Almshouses for the aged and infirm are urgently required, and have yet to be provided. Friend-in-Need Societies have done much good in the time past; but these institutions cannot now cope with the increasing destitution from the rapid increase of population, and from want of employment. The private charity of the more wealthy members of the community is needed, and must be systematically afforded in lieu of the indiscriminate almsgiving, long the practice of the country. The prevailing distress from poverty and want of employment, however, is such that measures on a larger scale must be devised by the Municipalities, or by Government, not only for the relief of indigence, but for the removal of the causes of pauperism, which invariably produces crime.

Civilisation and its advantages enjoyed by those in large towns have yet to be extended to rural districts, the kóralés and pattus of the various provinces, where, at times, under the influence of drought and unfavourable seasons, sickness occasionally breaks out, and decimates the population. This was remarkably the case in 1864, 1866, and 1875, when fever and dysentery were so remarkably rife. The people were not on these occasions uncared for and left to perish of sickness and starvation. Food was provided by Government;

but medical aid could be given only partially, as the prejudices of the people were then found to be strong against the use of European drugs. With time and better agents for dispensing remedies, these prejudices are being gradually overcome. There are fortunately at the same time influences at works to enlighten and elevate the population. The country is being gradually opened up by roads and railways, and little towns are springing up where formerly there was jungle. Irrigation works are being gradually restored, and will in time reclaim wild and uncultivated wastes, formerly inhabited, but which may now be said to be "pathless forests." We may yet hope that ere long the measures adopted to advance the material interests of the country will help "to scatter plenty over a smiling land." Our missionary societies are extending their operations into the far interior, so that moral improvement, as well as material advancement, may be anticipated. But the means of abating deadly disease are still the feeble simples of the Vedarála, and the charms and incantations of the devil-priest. Shall we not aid the Christian missionary in his work, if, like the "Great Exemplar," we be not at the same time missionary and physician? The good work has been commenced in the Medical College. Let us hope that in time the licentiates of this institution will multiply and be found in all parts of the Island, possessed by knowledge which will enable them to combat disease in its varied forms; safe advisers, who will teach the people to avoid the causes of disease, and thus afford to them the blessing of preventive as well as curative medicine.

# THE VẸDDA'S OF CEYLON.

By C. J. R. LE MESURIER, ESQ., C.C.S., F.G.S., &c.

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SOME years ago, while arranging the records of the old Kandy Kachchéri, I came across an account of the Vẹddás, written, so far as I can remember, in the form of an official report to the resident at Kandy in the year 1820. By the permission of the then Government Agent, I took a copy of this document, and since that time have had several opportunities of verifying the information it contained.

I do not think the account has ever been published, at least I can find no record to that effect, and I venture therefore to offer it in the form of a Paper to the Asiatic Society.

I have myself, on several occasions, come across the hill or rock Vẹddás, while shooting on the borders of the Central and Eastern Provinces. My first introduction to them was on this wise.

I was tracking up an elephant at some distance from the Pattipola ár, where my camp had been pitched. We were in the midst of a dense forest, when I suddenly heard the sound of an axe. The elephant had heard it too, apparently, for just about this time we saw from his tracks that he had bolted, and we therefore gave him up.

Turning to my tracker, I asked him who was cutting trees in this out of the way forest, and he replied that it was, he thought, a Vẹddá. I at once dashed off towards the sound, to see what was to me then a curio; but the tracker promptly stopped me, and said, "That is not the way to catch a Vẹddá: he will bolt the instant he hears you, and you will never see him. You must come like this," whereupon he went down on his hands and knees, and crawled towards the sound. I followed suit, and when we were close up we "rushed" our man. He was in a terrible fright at first, but we soon quieted him, and the tracker, who knew his patois, acted as interpreter between us. After a few words I asked him if he was alone. "No, he had his wife and children, and his brother and his brother's wife with him." I asked him to go and bring them, and he left us for about half a minute, and apparently without a word being spoken, returned with another man, two women, and two children, one being at the breast. A present of tobacco all round, and a few more words and promises of food, &c., from me made them quite friendly. The men visited me in camp next day, and were very useful in the field, from their knowledge of the country and where to find game. Since then, I have come across Vẹddás on several occasions, and the result of my personal experience is, in the main, to confirm the accuracy of the following account:—

The Vẹddás of Ceylon are thought by many to be the aborigines of the country, and their appearance, customs, and language certainly warrant this belief.

They are of two distinct classes, (1) the village, and (2) the rock or hill Vẹddás.*

(1) There is very little social intercourse amongst the pure village Vẹddás. They are said never to meet for any purpose of festivity. They subsist on the game they kill, on the fish they catch, on the roots and seeds of certain aquatic plants, and on yams and other jungle plants and creepers. The country in which they live abounds with elk, deer, wild hogs, hares, monkeys, porcupines, iguanas, peacocks, and jungle fowl, all of which they kill with bows and arrows, except the iguana, which they run down, or "tree," with

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* The village Vẹddá differs but very slightly now from the ordinary Siṇhalese villager of the interior. Most of the old village Vẹddá families have either become incorporated in the surrounding villages or have retreated further into the forest, and become hill Vẹddás.

their dogs. They cut the flesh off the larger animals into steaks, and dry it in the sun. In this state it is eaten raw, seasoned with honey or salt, when they can procure it. They eat the flesh of the iguana fresh, but broiled. They also pound to powder the rotten wood of a tree called *bala*, which is said to be like the *kẹkuna*, or country walnut. This they knead into a paste with honey, and then bake into cakes. They are, however, said not to eat this unless they are in want of something more nutritious and palatable, and they explain the addition of the rotten wood to the honey by saying that it is required to fill the stomach. They do not eat the flesh of the ox, the buffalo, the panther, or the bear. Some of the more civilised of these Vẹddás cultivate small patches of kurakkan (a small kind of grain) and Indian corn, and a little tobacco and cotton. They flay the deer, but not the elk. The skin of the latter they dress and eat after singeing the hair. When they have the flesh of these animals in plenty they dress it by boiling, but more frequently by roasting, and the flesh of recently killed animals thus dressed appears to be considered a luxury. When all other means of sustenance fail them, they boil the leaves of the *kora* and *tora* trees, which grow in abundance everywhere in the jungle.

They never kill or catch the elephant. They do not use firearms, and their bows and arrows are not intended for so formidable an animal.* They always avoid him in consequence. The bear and the panther are their most dangerous enemies, the former especially.† Many of the Vẹddás bear the marks of conflicts with it ; but with his axe, which with its short handle is an efficient weapon of defence against an animal that closes with his enemy, the Vẹddá generally comes off victorious, though often severely lacerated, and that usually about the face.

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* They are very bad shots with the bow, and they never "fire" until they are within three or four yards of their game.

† They have a number of charms against these animals, the principal ingredient in them being noise.

They barter their deer skins, dried flesh, cotton, and honey for rice, kurakkan, tobacco, salt, cloth, arrowheads, and axes. They carry on this trade with the Siŋhalese and Moormen in their neighbourhood. They exercise no art or handicraft but that of making their bows and arrows. The heads of the latter are made by the Siŋhalese blacksmiths. They all have an axe, and some few of them possess a small hoe; but they make little use of the latter in the cultivation of their lands, all they do previous to sowing the crop being to cut the jungle and burn it. They are fond of salt, but as frequently it is not to be had in their neighbourhood, the only seasoning they have for their food is honey.

They are passionately fond of tobacco, and would use betel could they procure it. They, however, find a substitute for it in the bark of certain trees,* which they chew with their tobacco. They do not practise smoking, they have no knowledge of intoxicating liquors, and drink nothing but water. They never cultivate paddy, the reason they give for this being that they are much fonder of hunting. They never do and will not apply themselves to any sort of labour, except now and then to a little high-land cultivation, and that never exceeds a rood or two for each family. They keep no domestic animals excepting dogs, and sometimes, but very rarely, a few fowls. Their huts are constructed in a very rude manner, some of them being a mere roof composed of three or four sloping poles, one end of which is placed in the ground, and the other end is supported by a cross stick placed on two perpendicular ones. Others have a perfect roof coming down to the ground on both sides, like the old military tents. Their huts are generally covered with the bark of trees, but sometimes with dried grass or straw. They never remain more than a few months in one place, and often shift their residence more frequently.

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* It was while stripping one of these trees of its bark that I first came across them.

The men wear a string round their middle, with a piece of cloth of the width of four or five inches passed between the legs, a flap of which about eight or nine inches long hangs over in front. The women wear a piece of cloth about the size of a small handkerchief, and in the fashion of an apron. The hair of both sexes is never combed, and is disgustingly matted and filthy. They wear no ornament in the hair, but sometimes tie a string round the head to keep the hair out of their eyes. They wear small earrings of iron or brass. Their bodies are never washed unless it be by the rain.

They speak Siŋhalese, but it is so corrupted that it is very difficult to understand. They make use of some words that are not Siŋhalese. Their voice is loud, harsh, ill-toned, and disagreeable.*

Polygamy is not practised either on the part of the men or the women. When the females arrive at a proper age, they are asked by the young men from their parents, who never refuse their daughter to the first suitor. No marriage presents are given on either side, nor is there ceremony or marriage feast. The bridegroom merely calls, as they express it, the bride from the hut of her parents to his own.† Their wives are generally prolific, but the great majority of their children die of fever when young. They speak most favourably of the fidelity of their wives, and assert that their caste is distinguished for chastity. They never repudiate their wives, whose duties are purely domestic, except that they assist in reaping the kurakkan. They are kindly treated by their husbands. As to the relative rank of the females, it is asserted that the men have more regard for their wives than for their brothers and sisters.

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* Many of the hill Vẹddás that I have come across appeared to have lost the power of modulating their voice, probably from disuse.

† The bride ties a string round the bridegroom's waist, and they are man and wife.

Strangers who reside in their country for any number of days seldom escape jungle fever, and they are not a little exposed to the baneful effects of the climate themselves. Besides fever they are subject to cutaneous complaints; but it does not appear that either venereal disease or small-pox is known among them. They attribute all sickness to the agency of malignant spirits, with whom they believe their country to abound. The use of medicine of any kind is not practised among them. They trust entirely to incantations to propitiate the demon who has afflicted them. In all cases of severe sickness they devote a silver ring and a piece of cloth, which are deposited in a particular place. After this, the Yakdesa, or demon priest, who is always one of the eldest of their own tribe, is sent for, and he dances and chants certain incantations before the sick persons. He is then fed with what they have to give him, which generally consists of the cakes made of honey and rotten wood, and the ceremony is concluded by his carrying off the ring and cloth offered in sacrifice from the spot where it was laid. They pay no respect to the dead. The body is thrown into the jungle without ceremony, to be devoured by wild beasts.

Of an all-powerful beneficent being they have no idea, but they believe in the existence of a plurality of malignant spirits. Of a future state they have no notion, and are equally ignorant of the religion of Buddha and the gods of Hindu mythology.*

Their knowledge and moral notions appear to be as limited as their mode of life. They cannot count beyond five, and the stupidity and apathy of some of them is very striking. There is, however, something in their manner, when in their native forests, like the independence or indifference that may be expected in a savage. One of them, on being asked to show how they steal upon their game, gave a most striking specimen of good acting. The keenness and intensity of his eye, the lightness of his step, and the eagerness of desire displayed in every limb and muscle of his body, could only be compared to those of a cat or a tiger stealing upon its prey.

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* They also believe in the fostering care of the spirits of the dead, whom, with the sun and moon, they constantly invoke in time of need.

Their whole appearance bespeaks the hardiness of their condition. They are lower in stature than the ordinary Siṇhalese, but are meagre in their bodies and squalid in their looks. Their figures denote that they might be active in their movements, but they give no indication of being possessed of much strength either of body or constitution. Their limbs, however, though thin and slight, are well turned. They are generally of a darker complexion than the common Siṇhalese, though some are of a much lighter shade than the others. When not in the jungle they carry a white staff about seven or eight feet long, and when they stand, they plant this before them, grasping it with both hands a little above the height of their forehead, and bend forward in a most unmeaning and ungraceful position.

(2) The hill Vẹddás are of the same caste and description as the others, their habits and customs are much the same, but they are described as being of a savage and ferocious disposition.* Persons who approach them are considered to be in danger, and they are said to be at enmity with all their neighbours.† There were certain seasons when the Vẹddás had to render a tribute of honey and flesh to Government, but, as the wild Vẹddás never entered a town or a village, the Vẹddás of Horabora used to repair to a certain place near their haunts, where they found the honey and dried deer's flesh deposited. They, however, seldom saw the people

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* The hill Vẹddás are fast becoming extinct, first, from constant intermarriage between members of the same family, second, from the decrease in the game of the country, and the consequent privation and lack of food.

† N.B.—This was written in 1820.

themselves, and when they did they avoided them as dangerous.

Both the wild and village Vẹddás rank with the Vellálas (the highest Siṇhalese caste). When the more civilised Vẹddás go to the house of a district chief of the Vellála caste, they receive water out of an earthen pot with a spout to it, a privilege that belongs only to the Vellálas.

The men among the wild Vẹddás are still more scantily clad than their neighbours, for they wear no cloth, but only a small apron of plaited leaves. The women are scarcely ever to be seen. They remain in the deepest recesses of the wood, or among the rocks in the hill country, and are as naked as the men.

The hill Vẹddás speak a language that is not understood either by Siṇhalese or Tamil, but some few words of the Siṇhalese language are to be recognised in it.* They hold no intercourse with their more civilised neighbours, and it is, as above stated, considered dangerous to go near the places of their resort. They are quite migratory in their habits and mode of life, remaining but a day or two at a time in one place. They have no huts, but take shelter under large trees or rocks. They have a fire constantly burning, which they produce by the friction of one piece of wood upon another. They live solely on what nature affords them, on roots, fish, and the game they kill with their bows and arrows.† They cultivate no kind of grain, and make nothing but their bows and arrows. The iron heads of the latter and their axes they obtain in the following manner:—They carry a quantity of dried flesh and honey to a place near the residence of a Siŋhalese blacksmith, and hang it up on a tree out of the reach of dogs and jackals, together with a leaf cut in the shape of the iron article they want. The smith fails not to accept the offer thus made to him, and in due time hangs up in the same place the article required in return. It is understood were he to fail in doing so, that he would be exposed to the most dreadful vengeance of the Vẹddá and his friends.*

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* Notwithstanding all that has been said to the contrary, I believe the Vẹddá language to be merely a patois of the ordinary Siṇhalese. Many of their words can even now be traced to a Siṇhalese origin, such as, for instance:—

To drink—*diya-kanawa*=in Siṇhalese, to eat water.
To sleep—*nidenawa*=in Siṇhalese, *nidagannawa*.
Snake—*polongo*=in Siṇhalese, *polonga*.
Lightning—*gini wẹtuna*=Siṇhalese, fallen fire, &c.

Considering that they have no knowledge of letters, no literature of any sort, nothing to arrest the constant change in their spoken language, it is remarkable that any indication of the affinity of this patois to Siṇhalese should have remained.

† The constant change in their residence is due to their search after game.

It is the general belief that the hill Vẹddás are extremely tenacious of the chastity of their wives. They are consequently apt to be jealous, and instances are not wanting of their sacrificing to their revenge both the wife and the supposed paramour; but all speak in high terms of their kind treatment of their wives, and of the fidelity of the latter to their husbands.

The hill Vẹddás living along the frontiers of the Kandyan and Maritime Provinces never acknowledged by tribute either the Dutch, British, or Kandyan Governments; but those towards Horabora in Bintẹnna paid a tribute of flesh and honey at three different seasons of the year to the royal stores at Kandy. This they of their own accord, at the proper time, hung upon a tree, and it was brought from thence by the Vẹddás of Horabora, as has already been noticed. The officer whose duty it was to collect the tribute never had any personal communication with the hill Vẹddás, and having no control over them he could not have enforced the payment had it been withheld. There was, however, no known instance of their ever having failed to pay in due time.

They never commit depredations upon the crops or property of any kind belonging to their civilised neighbours, nor do they molest traders or travellers on the commonly frequented paths that lead through the country they inhabit. It is dangerous to offend them, and instances are known in the Batticaloa district where they have revenged an injury by deliberate assassination.

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* This custom has fallen into disuse.

In Major Johnstone's expedition from Batticaloa to Kandy, in 1804, the first person that fell was brought down by the arrow of a Vẹddá. On the march of the detachment through the Vẹddá woods between the Nadakáḍu province of the Batticaloa district and the frontier of Wellassa, a small clear spot was chosen to encamp on for the night. It was on the side of a wood which a party of the pioneers entered for the purpose of procuring firewood. It happened that a few Vẹddás had here taken up their temporary abode. They fled on being discovered by the pioneers, who at once proceeded to plunder the little property they had left in their huts, the most valuable part of which consisted of two or three fowls, who, like their owners, sought safety in the jungle. While one of the pioneers was pursuing a fowl, a Vẹddá concealed in a bush shot him through the loins. This happened but a few yards from the camp. The wounded man was brought in alive, and the arrow was extracted by the medical officer, but he died in a few hours. The Vẹddás effected their escape. An instance of their mode of taking revenge took place in the Batticaloa district about 1822. One of the more civilised Vẹddás, a lad who had established a friendly intercourse with a hill family, conceiving an attachment to a young female of the family, made proposal to the parents for her. The match for some cause or other did not come off, and shortly after the girl sickened and died. The family attributed her death to necromancy practised by the young man, and under this impression, four or five years after, a brother of the young woman left the woods in search of the object of his revenge, and having found him watching a paddy field in the Batticaloa district, walked up to him in the open day, and deliberately shot him through the body.

This was done in sight of another man, a Malabar, who was in the same field at some distance, and from whom the Vęddá had ascertained the identity of the man he was in search of. The assassin, after withdrawing the fatal shaft from the body of his victim, made his escape into the woods.

They are not only ready thus to redress their own grievances, but also those of their friends; and this disposition was sometimes taken advantage of by the Moormen and Malabars, who were in the habit of intervening between those who are in a sort of semi-civilised state, and the absolutely unsocial and uncivilised Vęddás. An instance of this also took place in the Batticaloa district, about the same time. A headman of the Province of Pattipal having rendered himself obnoxious to the chena cultivators near the Vęddá country, a party of Vęddás came down quietly in the night to the village where the headman was residing at the time, surrounded his house, plundered it, and put him to death. In short, the disposition of the hill Vęddás was so well known that the Sịnhalese, Malabar, and Moor families, from whom the petty chiefs placed over the partly civilised tribe were generally taken, both in the interior and the Batticaloa district, were objects of dread amongst their neighbours from the influence they possessed over such ready instruments of revenge.

In regard to their origin, it is remarkable that the traditional accounts of them given by the best informed Kandyan chiefs, and the most intelligent Tamil inhabitants of the Batticaloa district, perfectly accord with each other.*

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* The historical origin of the Vęddás is as follows:—When Wijayo landed in Ceylon, he married Kuwena, the daughter of a Yakko chief. She betrayed her people into his hands, but when she had served his purpose he deserted her. She returned to her people, but they were so incensed with her that they put her to death; and her two children by Wijayo only escaped the same fate by the intervention of their uncle, who fled with them into the forest near Adam's Peak. Some time after the brother and sister married, and founded a wild race, who kept aloof from all their neighbours, retreated into the forests of Wellassa and Batticaloa on the approach of the Indian invaders. and became "the wild men" of Knox—the Vęddás (or hunters) of Ceylon.

The Kandyans say that the Vẹddás are real Siŋhalese Vellálas, who at a period of very remote antiquity occupied the tract of country which now constitutes the district of Batticaloa. That they were expelled from thence by an invasion of Tamils from a foreign country, and took refuge in the forests in which they are now met with. They would not mix with the other inhabitants of the country, but to criminals and other unprotected fugitives who took refuge amongst them, and to slaves who fled from their masters, they generally afforded hospitality and protection, though they were apt to deliver them up for presents in cloth, &c.

They are totally unacquainted with letters, but the different tribes hold a rude correspondence with each other by small pieces of wood cut into different shapes. Fugitives used to be furnished with passports of this kind, when they removed from one tribe to another, and the treatment they received depended on the recommendation which the talisman conveyed.

Man in a state of nature, or in any degree approaching it, is ever an object of curiosity to the civilised world. The knowledge of the existence of the Vẹddás of Ceylon must therefore excite a wish to be acquainted with their origin and history. From themselves, however, no information whatever can be obtained. They trouble themselves little about futurity, and the past is a blank to them. They are said to have been in the habit of addressing the King of Kandy by a word which signified "brother"; but this was merely due to the poverty of their vocabulary, as the word *aluwa** is used by them when speaking of or to all persons with whom they are in friendship, and in consideration of this they were allowed to use this familiar term in the presence of the late king, a liberty that would have cost any other of his subjects their lives.

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* Bailey, who, by the way, says that the word is "hoon" (cousin), attributes this familiarity to the fact that the Vẹddás claimed and were acknowledged to have a royal origin.

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> "The design of the Society is to institute and promote inquiries into the History, Religion, Literature, Arts, and Social Condition of the present and former Inhabitants of the Island, with its Geology, Mineralogy, its Climate and Meteorology, its Botany and Zoology."

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# *ERRATA ET ADDENDA.*

Page 351, note ‖, *for* "p. 124" *read* "p. 62."
,, 352, line 2, *for* "Van Goen" *read* "Van Goens."
,, 353, note ‡, *for* "Norasa" *read* "Novasa."
,, 358, note *, *for* "p. 123" *read* "p. 62."
,, 358, note †, *for* "p. 126" *read* "p. 63."
,, 359, line 30, *for* "Taylor" *read* "Tylor."
,, 359, note *, *omit* "Die omfänge der cultur übers."
,, 359, note †, *for* "Taylor" *read* "Tylor."
,, 359, note †, *for* "Spang" *read* "Spangel."
,, 368, note †, *for* "Zuitf." *read* "Zeits. für" *passim.*
,, 378, note *, *for* "Mokna" *read* "Mokua."
,, 381, line 2, *for* "Ẹlu" *read* "Eḷu."
,, 381, note *, *for* "p. 104" *read* "p. 61."
,, 384, line 12, *for* "κολορα" *read* "κολοβà."
,, 387, last line, *after* "precipices" *insert* "(λιθίνοις σπηλαίοις)."
,, 388, line 16, *for* "Zvortvan berwe beandend," &c., *read* "Zwart van verwe, brandend," &c.
,, 394, line 6, *after* "Skull No. 1" *insert* "(Table I.)."
,, 394, line 11, *for* "Dewilané" *read* "Denilane."
,, 398, line 13, *for* "Busle" *read* "Busk."
,, 398, line 14, *for* "two last" *read* "last two."
,, 398, line 31, *after* "Museum," *insert* "(Table I., Fig. 3)."
,, 399, line 21, *for* "Weleker" *read* "Welcker."
,, 402, line 11, *for* "*occipitale*" *read* "*occipitalis.*"
,, 404, line 10, *for* "76" *read* "7·6."
,, 404, line 12, *after* "skull" *insert* "(Flower, No. 683)."
,, 406, line 16, *for* "chamæprosopous" *read* "chamæprosopic."
,, 406, line 29, *after* "skull," *insert* "(No. 675)."
,, 406, line 35, *for* "alreolar" *read* "alveolar."
,, 406, line 36, *for* "basilar alvesli" length *read* "basi-alveolar length."
,, 407, line 2, *for* "basinasel" *read* "basinasal."
,, 409, line 2, *for* "Bernard" *read* "Barnard."
,, 411, line 18, *for* "von" *read* "van."
,, 411, line 19, *for* "vrijser ruf tig" *read* "vrij vernuftig."
,, 411, note *, *for* "Tambulus" *read* "Jambulus."

# ROYAL ASIATIC SOCIETY,

# CEYLON BRANCH.

## THE VẸDDÁS OF CEYLON, AND THEIR RELATION TO THE NEIGHBOURING TRIBES.

By Professor R. Virchow.

*Translated for the Ceylon Asiatic Society from the Memoirs of the Royal Academy of Science of Berlin, 1881.*

In the various mixture of races inhabiting the Island of Ceylon, the Vẹddás (Vaeddas, Weddas, Veddahs, Vaddahs, Vaidahs, Beddas, Bedas) have since a long time been an object of special prominence for the study of ethnography, because, owing to an inferior order of intellectual development, and through defects in physical organisation, it offers the most room for conjecture that here is presented a remnant of the aboriginal inhabitants. And now, when according to all accounts their number is so rapidly diminishing that at no very distant date its last members will have disappeared from among the living, it adds peculiar interest to the study that it is desirable to transmit to posterity at least a trustworthy picture of its singular characteristics. For this the material we now have is nowise sufficient: hence the task for the following disquisition is not merely to collect what has been already arrived at, but to point out the gaps which can be supplied only by farther local researches. It is to be hoped that this may stimulate to the immediate application of all possible means to obtain the wanting material.

The Vẹddás have dwelt—at least for some centuries—in one district in the eastern, or more correctly, south-eastern part of the Island. Robert Knox, who gave the first exact information regarding them in the year 1681, transferred them to the woods of "Bintan" (Bintẹnne).* John Davy† in the early part of this century speaks of them as inhabiting the vast forests on the south-east side of the Island, between the mountains and the sea, especially the wild, unhealthy tracts of land called *Vẹdiraṭa* of Bintẹnna and *Mahavẹdiraṭa* of U'va. These they consider as their own territories. On the whole their boundaries remain the same to-day. Sir E. Tennent‡ and Mr. Bertram F. Hartshorne§ assert that the Vẹddá-land is about ninety English miles in length and forty in breadth, from the hills of U'va and Mẹdamahanuwara toward the east and extending to the sea coast, while Mr. Pridham,‖ who estimates the area at very nearly 1,500 square miles (English), bounds it more precisely in the following way: Batticaloa on the east, the districts of Mágampattu and U'va on the south, the mountains of Kandy on the west and south-west, and the river Mahavẹli-gaṇga on the north. Mr. John Bailey¶ states that the majority of the real Vẹddás dwelt in the districts of Batticaloa and Badulla (chiefly in the former); but here it should be said that according to a later division of the country a part of Bintẹnna has been added to the district of Badulla, and the larger portion of it to the district of Batticaloa.* The more savage remnant of the tribe live in the beautiful province of Nilgala and in the forests of Bintẹnna.

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* Robert Knox. An Historical Relation of the Island of Ceylon in the East Indies. London, 1681, p. 61. New edition, printed in Philalethes. The History of Ceylon from the earliest period to the year MDCCCXV. London, 1817.

† John Davy. An Account of the Interior of Ceylon and of its Inhabitants, with Travels in that Island. London, 1821, pp. 115, 116.

‡ Sir James Emerson Tennent. Ceylon: an Account of the Island, Physical, Historical, and Topographical. London, 1859, vol. II., p. 437.

§ Hartshorne, in the *Fortnightly Review*. London, 1876. New series, vol. XIX.

‖ Charles Pridham. An Historical, Political, and Statistical Account of Ceylon and its Dependencies. London, 1849, vol. I., p. 452.

¶ John Bailey, in Transactions of the Ethnological Society. London, 1863. New series, vol. II., p. 278.

There is much evidence, however, that in times not very distant the Vẹddás were scattered over a much larger extent of territory. The name "Vẹddá-land" (*Vẹdirața*) in the time of Mr. Bailey (1863) belonged to extensive districts in the north-east of the Kandy mountains, which were no longer inhabited by the Vẹddás, but by the Siŋhalese (Wanniyas). The designation *Mahavẹdirața* ("Great Vẹddá-land") seems of pretty wide application. Davy, who in one place transfers it to U'va, in another† gives it to the far-reaching flat lands in which the so-called "lake" of Bintẹnna lies. Mr. Pridham, who indeed was never himself in Ceylon, places *Mahavẹdirața* in Wellassé and a part of U'va. These are subordinate matters, however. More important far are several earlier statements. Cordiner‡ tells us, after mentioning the real Vẹddás, that "another race of a similar description formerly existed in the district of the Wanny, bordering on the province of Jaffnapatam. They are now, in some degree, civilised." They spoke Malabar, and adhered to the Brahmin religion. In another place he says§ that at the advent of the Portuguese the "Bedahs" dwelt in the north and the Siŋhalese in the south. This seems to prove that the Vẹddás formerly reached much farther northward. But their earlier presence in the south and even south-west is also proved. Knox‖ tells us that at "Hourly," a remote possession of the king of Kandy, numerous Vẹddás were living, who were, however, pretty tame; and Valentijn¶ mentions, besides "Vintana" and "Hoerli," still another

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* Bailey, *l. c.*, p. 281, note.

† Davy, *l. c.*, p. 377.

‡ James Cordiner. A Description of Ceylon. London, 1807, vol. I., p. 91.

§ *Id.*, p. 137.

‖ Knox, p. 124.

¶ François Valentijn. Oud en Nieuw Oost Indie. Dordr. en Amsterdam, 1726. Deel V. Ceylon, p. 49.

"Beda" district, farther north than Trincomalee. Bergk, the translator of Percival's work,* says that Van Goen states the "Bedahs" had entire possession of the land between the mountains of "Canducarre" in the west and Passara in the north; while Percival counts† as belonging to them not only the Indians in the adjoining province of Jaffnapatam, but the tribes inhabiting the western and south-western part of the Island between Adam's Peak and the Rayigam and Pasdum kóralés.

In regard to these statements, I remark that Bergk's view of the situation of the district mentioned is erroneous, as a glance at the map by A. Arrowsmith,‡ contained in the book he translated, would have taught him. The district of "Canducarre" (according likewise to the map of Ceylon published by J. Mawman, 1816, which is appended to the new edition of Knox) lies at the east of the Island, S.S.W. from Batticaloa, as well as the immediately adjoining district of Passara, which is a province of U'va directly north of it, and close to Badulla.§ From this the country between "Canducarre" and Passara would be the real Vęddá territory, whereas the Rayigam and Pasdum kóralés lie on the west coast south of Colombo, in the neighbourhood of Saffragam and south-west of Adam's Peak.

Mr. Bailey,‖ in whose time indeed there were no longer any Vęddás living there, conjectures that Saffragam (from its old name *Habaragamuwa*) was the original land of the Vęddás (*habara*, "barbarian"), and as proof of this gives a variety of local names still extant. He also finds in a Siŋhalese poem, written about four hundred years ago, *Parawi*

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* Robert Percival. Description of the Island of Ceylon, translated by J. A. Bergk. Leipsic, 1803, p. 337, remarks.

† Robert Percival. An Account of the Island of Ceylon, containing its History, Geography, Natural History, with the Manners and Customs of its various Inhabitants. Second edition, London, 1805, pp. 282-284.

‡ The map in Tennent's work is by John Arrowsmith.

§ Davy, *l. c.*, p. 413. Pridham, *l. c.*, I., p. 361.

‖ Bailey, *l. c.*, p. 313, note.

*Sandése*, the district right below Adam's Peak distinctly inhabited by Vẹddás. Possibly only some scattered remnants of the tribe dwelt among these mountains.

That four hundred years ago the Vẹddá territory extended continuously in this way as far as the west side of the mountains, and even to the western sea coast, is highly improbable, as a Chinese geographer, Hiouen Thsang, in the seventh century of our era, travelling in India states that the Yakkhos had* withdrawn into the south-east corner of Ceylon. It may, however, be correct that as Sir E. Tennent asserts, under the Dutch Government Vẹddás were found in large numbers, but half civilised, at no great distance north of the peninsula of Jaffna, in the so-called Wanni. The question whether in the earliest ages Vẹddás inhabited the whole Island I will take up later.

The present Vẹddá-land is very lovely, embracing a comparatively flat, wooded country, nowhere raised more than two hundred feet above the level of the sea, but frequently having the appearance of a park. It would seem that the character of the soil varies, since dams and unwholesome marshes alternate with rock-ribbed hills. The Rev. Mr. Gillings† speaks of the province of Bintẹnna as very dry and rocky. But Mr. Frederick Müller‡ is mistaken in transferring the home of the Vẹddás to the mountains of Ceylon. All the more recent accounts limit their abodes to the anterior land which separates the central mountains from the sea coast, excluding them wholly from the mountains themselves. Sir Emerson Tennent§ to be sure makes a distinction between the somewhat more civilised village and coast tribes, and the wild "Rock Veddahs, *galle-vedda*."

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* Tennent, *l. c.*, I., p. 372, note.

† The Journal of the Ceylon Branch of the Royal Asiatic Society. Colombo, 1853, p. 89.

‡ Reise der östere. Fregatte Norasa. Anthropologischer Theil. Abth. III. Ethnographie. Wien, 1868, s. 139.

§ Tennent, *l. c.*, II., pp. 439–44.

If we reject his attempt to identify these with an ancient tribe of "Gallas," who may have dwelt in the same portions of the south as the present Galle, and admit that the rocky character of the region in which the wildest part of the tribe live accounts for the name, evidently given them by strangers, it does not by any means follow that the rock Vẹddás are mountaineers. For centuries the real inhabitants of the mountains have been Siŋhalese, the people of *Máyáraṭa*. Sir E. Tennent established the rock Vẹddás, who, according to him, had split into five clans or hunting-parties in the woods of Bintẹnna, and whilst the village Vẹddás, amounting at the highest estimate to not more than one hundred and forty families, lived in nine small communities around the Laguna district of Batticaloa, the coast Vẹddás, four or five hundred in number, roamed about in the jungles between Batticaloa and Trincomalee, chiefly in the vicinity of Erávúr and along the coast as far as Vendeloos Bay. Mr. Hartshorne, however, rejects this division wholly ; he distinguishes only *Kẹlẹ́-Vẹddó* (jungle Vẹddás) and *Gan̥-Vẹddó* (half-civilised village Vẹddás), the former only as deserving the special attention of ethnologists.

If we study the map of Ceylon, it becomes at once clear that Bintẹnna, the ancient capital, which Sir E. Tennent speaks of as identical with the *Maagrammum* of Ptolemy,* lies directly upon the eastern boundary of the mountains towards the foreland. The Maháwẹli-gaŋga, the largest river of the Island, here bursts out from the hill-country, behind which the mountains of Kandy and U'va rise westward; to the east are fertile plains, swamp lands, and extensive forests, interspersed with low hills. Sir E. Tennent* paints in rich colours this beautiful country, which he passed through on his way from Bintẹnna to Batticaloa on the east coast. This is the real home of the Vẹddás. Knox† also describes very distinctly this country,—this land of Bintẹnna,—which he surveyed from afar on the tops of the mountains. He says : "It seems to be smooth land, and not much hilly ; the great river runneth through the midst of it. It is all over covered with mighty woods and abundance of deer; but much subject to dry weather and sickness. In these woods is a sort of wild people inhabiting." The wild Vẹddás live here in perfect isolation, as well from their allophylen neighbours as their more civilised tribal brethren, without fixed abodes, but yet upon their own recognised lands, mostly in small groups, or simply in families. Rarely do they venture beyond their own boundaries, and then only for the purpose of exchanging honey, wax, skins, or venison for tools of iron (axes, arrow-points, &c.). For the most part they shrink timidly back from all human contact, and even their small commerce was not at first openly pursued,‡ but in this wise: they deposited their wares and rough models of the things they wanted in a certain place, and returned later to take away secretly the needed articles. This explains why the estimates of their present number vary so much.

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* Tennent, *l. c.*, I., p. 536, note 2. This he rests on the old name of Bintẹnna having been Mahiyangana, and asserts that this could not possibly mean Mahagan, as was assumed by Christ. Lassen. (*De Taprobane insula veteribus cognita. Diss. pro aditu, muneris prof. ordin. Bonnae, 1842*, p. 23.)

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* Tennent, *l. c.*, II., p. 451.

† Knox, *l. c.*, p. 9.

‡ Mr. Hartshorne asserts that this mysterious way which Sir Emerson Tennent made so much of is no longer carried on. The first mention of it is by Knox. Earlier authors, in speaking of the secret trade, refer, as far as I can see, not merely to the Vẹddás, but to the Ceylonese in general. It does not appear to me at all certain that the passage in Pliny (Natur. Hist. Lib., VI., 24), in spite of Sir E. Tennent's plea (*l. c.*, I., p. 571, note 1), refers to the Ceylonese, as it does not describe the trade in the interior of the country, but outside, near the boundary of the Serae,—far away upon the continent,—exhibiting it more as a peculiarity of the Serae than of the Ceylonese. The interpretation put upon the passage is of little importance, however, as Chinese authors—for instance, Fa Hiaen—mention this kind of secret trade in the third century as carried on upon the Island itself. That Pliny at the same time refers to the worship of demons certainly would seem to point to the Vẹddás, but on the other hand a report by the Arabic geographer Albyruni (1030 A. D.) shows that in his time the secret trade was pursued along the coast. We should therefore have to assume that the Vẹddás carried on a coast trade in the eleventh century, which is not probable.

Cordiner says, most indefinitely, "not many thousands in number"; whilst Sir Emerson Tennent,* in the year 1859, considered the estimate at that time of 8,000 an exaggerated one. Mr. Bailey, in 1863, declared the number of the Vęddás in the district of Batticaloa to be only about 250, in Nilgala 72 (in 1858), and in Bintęnna 364 (in 1856),—altogether only about 686. Mr. Hartshorne speaks of these figures as probably too small; and a communication from the Rev. Mr. Gillings† seems to corroborate this, according to which, by the census of 1849, in the district of Bintęnna alone there was a population in all of 1,538 persons,—half-Siŋhalese, half-Vęddás. At any rate, from the declarations of Mr. Bailey there is no question that the recruits are very small indeed, and the annihilation of the entire tribe imminent. For he found‡ in Nilgala among 72 persons, 50 adults and 22 children (in one family of 9, and another of 8 adults, only 1 child in each); and among the 50 adults but 14 over fifty years of age; a single member only seemed to be over seventy years of age. Of 308 persons in Bintęnna, 175 were adults and 133 children; in an isolated horde 22 adults and 4 children. And as if to make this more conclusive, we are assured that there are no indications anywhere of the practice of child-murder among them.

Of late the process of annihilation seems to have hastened on. From a note of the Rev. Somanader, a missionary in Batticaloa, which I received through the kindness of the Director of the Museum in Colombo, Mr. A. Haly, we are led to think there are scarcely any pure blooded Vęddás living; he calls them "a race almost entirely extinct."

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* Tennent, *l. c.*, II., p. 444. † Gillings, *l. c.*, p. 83.
‡ Bailey, *l. c.*, p. 296.

Whether this assertion applies to a particular district or is universal, and whether the extinction has been hurried on by a general dying out or through intermarriages with other tribes, I have not been able to discover from the information given me. We can do little more at this distance than to hold together what has been furnished us by observers, who had opportunities of intercourse with living Vẹddás in their own home. Among these we must name above all, Dr. Davy, Sir Emerson Tennent, the Rev. Mr. Gillings, Mr. Bailey, and Mr. Hartshorne. But we encounter at the outset a peculiar obstacle, viz.: that each fresh writer designates the statements of his predecessor as "incorrect." Mr. Bailey* criticises Sir Emerson Tennent in the severest manner, and Mr. Hartshorne,† who on this point agrees with him also, calls in question the accuracy of Mr. Bailey's statements.

Yet Mr. Bailey was many long years in Ceylon. First, as a member of the Government in the district of Badulla, and later as Principal Assistant Colonial Secretary of Ceylon, affording him sufficient opportunity to study the Vẹddás. He puts great emphasis on the fact, and reiterates it frequently, that his statements are sustained by well-tested and often repeated personal observations. It appears to me that the contradiction between Messrs. Bailey and Hartshorne is not in reality so great as the latter pictures it. I find that in the space of more than twenty years which intervenes between the two accounts, the effects of educating influences pressing in from all sides upon a before almost isolated people is very noticeable, and explains in the most natural way how certain habits and customs disappear, and others come in. I am therefore inclined to value more highly the testimony of the older observer for his time, than the younger observer is inclined to warrant. But I believe I must defend their distinguished predecessor, Sir Emerson Tennent, against them both. His representations bear throughout the character of great soberness and objectivity; and his facts differ in the main points very little indeed from those of his successors, especially the more immediate one. We cannot in justice deny that he was the first to throw light on this subject.

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* Bailey, *l. c.*, p. 279, note. "His [Tennent's] account of them is in some important instances defective, and even inaccurate. He glances casually at those tribes which are in the wildest state, touching with precision none of their peculiarities, and dwells in detail upon those only who from long association with the Singalese and Tamil races have lost much of their originality. Of the ancient aborigines he has compiled much that is curious. Of the existing Veddahs he has given us little besides an epitome of former notices."

† Hartshorne, *l. c.* "They have been described by Sir Emerson Tennent and by Mr. Bailey; but interesting as their accounts are, the latter has suffered grievously from misprints, and the value of the former is impaired by the circumstance that its materials were not the fruit of original research."

For all this it is very dangerous under such circumstances to decide, at our distance, where the mistakes are, and what is to be accepted as true; and nought remains but to confine ourselves to such changes as can be clearly traced and followed in their development, or to matters about which the various observers agree. Fortunately there is enough to disclose to us the main characteristics of the people. The greatest difficulty here arises from the fact that not a few of the travellers who have treated the subject of the Veddás—notwithstanding a long residence in the Island—have never personally seen any of them, and speak only from hearsay; and others certainly have not encountered the really wild families. Even Knox,* who never saw a single Veddá, and yet furnishes a likeness of one, distinguishes a "tamer sort," who lived under a kind of subjection to the king of Kandy, and a "wilder," who were called "*Ramba-Vaddahs*."† Davy,‡ who divides them into village and forest Veddás, seems only to have seen the former, yet feels justified in assuming from the information he received that both belong to the same race. In this all later observers entirely agree. Hence, for the study of their physical condition we may without hesitation unite the two groups, so far as they are not already united; but for the observation of their social and psychical conditions we must hold the two groups strictly apart: of course in the latter respect only are the forest or jungle Vẹddás of any interest to us. I shall therefore speak mainly of them; nevertheless we may not venture quite to set aside the village Vẹddás, since their actual settlement and civilisation has succeeded only very imperfectly as yet.

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* Knox, *l. c.*, p. 123. † *Id.*, p. 126. ‡ Davy, *l. c.*, pp. 116, 118.

As a matter of fact, all attempts to bring the Vẹddás into fixed abodes and to raise them to a higher culture have suffered shipwreck in far greater measure than the efforts to civilise the Australians. Government officials and missionaries have been active among them many years, but their success has been wholly external. Rev. Mr. Gillings states that up to 1844, in Bintẹnna, 163 men, 48 women, and 85 children had been baptised—since then very few; and adds, "but almost all of these have gone back again to their former habits and follies: what they formerly heard they have forgotten." The Vẹddás have remained on the whole nomadic heathens, and heathens without any developed form of religion. "They are a horde of 'Free-thinkers,'" said Wolf,* "following the impulses of their bad and savage natures." Whether they actually have any conceptions of God or God-like beings is, to say the least, very doubtful. The only thing that is proved is a lower kind of demon worship among them, which here and there assumes the form of a worship of their ancestors. If Mr. Taylor† designates this as *animismus*, and therefore "their religion," as corresponding to that of the barbarous tribes of India, we at least must not overlook the fact that it is also close upon the borders of Nihilism. Gillings says they believe the souls of their departed relations to be devils, who have power to hurt them, and therefore they perform ceremonies to them at regular seasons, and especially when they are sick. Bailey and Hartshorne described these matters in detail.

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* Joh. Chr. Wolf. Reise nach Zeilon. Berlin u Stettin, 1782. Th. I. S. Die omfánge der cultur übers.

† Edward B. Taylor. The Beginning of Culture. Translated by Spang u Poske. Leipsic, 1873. Bd. I. S., 51.

The former* distinguishes the conditions as they were in Bintẹnna from those of the more barbarous inhabitants of Nilgala. There, he says, they had mourned and buried their dead for a long time; here they had only just begun to do so. Formerly they threw their dead into the jungle,† or left them just where they died. After covering the body with leaves they laid a heavy stone upon the breast, and sought for themselves another cavern, giving up the one where death had entered to the spirit of the departed. This spirit (*yakun*) watches over the welfare of those left behind. The spirits therefore of their ancestors, like those of children, are good spirits (*néhya yakun*); they come to their relatives when they are ill, visit them in dreams, and grant them flesh of the chase. In every trouble the Vẹddás invoke these spirits, especially the spirits of children (*bilindu yakun* or *vitera yakun*). Among their ancestors the great grandmother (*mahakiriammá*) seems to have occupied the first place, although Mr. Bailey is not quite sure whether this distinction is to be understood in the good sense. The spirits are invoked with dance and song, around an arrow, which is planted upright (*Maha kiri amma*).

The description given of all this by Sir E. Tennent‡ almost reminds one of the customs of the Schamanen. Sometimes, while preparing for the chase, the spirit is promised a piece of flesh of the slain animal. At other times they cook something and put it in the dry bed of a river or other obscure place, invoke the souls of the departed, dance round the food, and perform their incantations.

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* Bailey, *l. c.*, pp. 296–301.

† Davy, *l. c.*, p. 117.

‡ "When sick, they send for the devil dancers to drive away the evil spirit who is believed to inflict the disease. The dance is executed in front of an offering of something eatable, placed on a tripod of sticks, the dancer having his head and girdle decorated with green leaves. At first he shuffles with his feet to a plaintive air, but by degrees he works himself into a state of great excitement and action, accompanied by moans and screams, and during this paroxysm he professes to be inspired with instructions for the cure of the patient." (Tennent, II., p. 442.)

Sir E. Tennent also reports that the dead were not buried, but simply covered over with shrubs and leaves in the jungle. On the other hand the Secretary of the Ceylon Branch of the Royal Asiatic Society* (1853) tells of their wrapping the dead in mats and burying them; and Mr. Hartshorne† knows of no other practice than burying. When a person is dead they envelop him in the skin of an animal, and dig a grave for him with their axes or pointed sticks. Women are not allowed to be present. No weapons or utensils of any kind are buried with him, and once closed over they never visit the grave again. To the spirit of the departed one, who has now become a yakká, an offering is brought in the following way: While invoking the spirit they roast the flesh of the *wandurá* (monkey) or the *talagoyá* (iguana) with honey and edible roots, and distribute it among those present, who eat it on the spot. The word *yakko*, or *yakkho*, designates, according to Turnour,‡ a kind of demon, though the demon worshippers are also called Yakkhos and Yakkhinis. He derives it from the root *yaja*, "to bring offerings." This word has for a long time justly excited the attention of scientists, since in the great historical work of Ceylon, the Maháwaṇso, the earliest inhabitants of the Island are called by this name.

When Wijayo, the founder of the first known Ceylon dynasty, in the year of Gotama Buddha's death, 543 B.C., landed, as is generally assumed, upon the north-west coast, not far from Puttaḷam,* he found an already organised Yakkho state:† indeed, it is related of Gotama Buddha himself that he came to Laṅká,‡ a settlement of the Yakkhos. It would hardly be allowable to conclude from this, with Sir Emerson Tennent§ and others, that the people of the north-west coast, to whom the name of Yakkhos was given, were identical with the present Vẹddás, and that up to the time of Wijayo an aboriginal homogeneous race inhabited the Island; but it may not be a mistake to assume that in the earliest period almost the entire population were devoted to this *yakkho* worship, as it now exists among the Vẹddás, and is to be found only among them; for the Siṇhalese are Buddhists, the Moors and the greater number of the Tamils being Muhammadans.

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* Journal of the Royal Asiatic Society, Ceylon Branch, 1853, p. 89.

† Hartshorne, *l. c.*

‡ The Maháwaṇso, edited by George Turnour. Ceylon, 1837, vol. I., Index and Glossary, p. 30.

One fact also speaks against the whole Island having been inhabited by Vẹddás: that the legends tell of kings, princesses, and cities (for instance, Laṅkápura) of the Yakkhos, whilst no trace of all these is to be found among the Vẹddás of modern times. As they have no God, no priests, no temple, so they make shift to get on without a king, without chiefs, and without cities, even without houses. At least this is true of the wilder portion of them. We should have to assume such deep degeneration of the present Vẹddás, from the old Yakkho times, as would be without a parallel in history as well as in ethnology. Even for those who, like myself, acknowledge the possibility of a deep mental and physical degradation of whole tribes, it would yet be going very far to admit that a tribe which had never changed its ground, and was living in the immediate vicinity of comparatively highly civilised tribes, could in a little more than two thousand years have sunk so low. Farther accounts will certainly prove that the question of the deterioration of the Vẹddás is not to be evaded; but I must here declare that I cannot bring myself to admit their possible decline from an organised Yakkho state.

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* Mr. Brodie (Journal Royal Asiatic Society, Ceylon Branch, 1853, p. 48) states that the place where the first settlement was made (Tambapanni), now called Tammena Aḍaviya, lies about six or eight English miles east of Puttaḷam. The word Tambapanni is derived from the Greek name for the Island, Taprobane. Tennent, *l. c.*, vol. I., p. 525, note I.

† Maháwaṇso, pp. 48, 49.

‡ *Id.*, p. 2. Laṅká filled by Yakkhos, and therefore the settlement of the Yakkhos. Laṅká is an old name of Ceylon.

§ Tennent, *l. c.*, II., p. 438.

Not a single fact sustains the conjecture that Wijayo, with his followers from the Valley of the Ganges, was the first stranger who came to Ceylon. On the contrary, the legend of the advent of Gotama Buddha clearly points to earlier arrivals. This is done no less by the old traditions of the Rámáyaṇa. Lassen* declared outright that in the legend of Ráma we must see the reminiscence of a former attempt to colonise this Island by immigrants from India. The north-west coast of Ceylon lies so near the coast of Coromandel, and the vicinity of Adam's Bridge having always been (then as well as later) the landing place for intruders from Hindústán, it would be astonishing if the first immigration at such a remote period should immediately have become a fixed fact in history. If Wijayo found some kind of political organisation on the Island, we may assume that before him there had been an invasion of other tribes, and the time in which the whole north of the great Island was Vẹddá land must then be placed a good deal further back. In historic times one irruption after another from the north and west occurred, and the aborigines were driven toward the south and east. But of these aborigines we must say that only a part of them have preserved in its purity the original type.

The first visit of Gotama Buddha to the Island was, according to the Maháwaṇso,† at Mahiyangana. This place, to be sure, is found right in the present Vẹddá land near Bintẹnna, where afterward the kings Devánampiyatissa (307 B.C.) and Duṭugemuṇu (164 B.C.) had erected a dágaba.* According to the Yakkhos, in whose midst the Buddha here appeared, he visited on a second occasion "Nágadípo," the abode of the Nágas, or snake-worshippers,† which is generally assumed to be the name for the north and west of the Island; at any rate, mention is made of Nágas living by the ocean, as well as mountain Nágas: there is a Nága king of Kelaniya spoken of in the neighbourhood of Colombo. Sir E. Tennent‡ compares this idol worship to that of the Rákshas among the Dravidian tribes of Hindústán, and probably with much correctness, but he overlooks the fact that if any importance is to be attached to these mythological traditions, a multitude of tribes, or at least a division of the original population, must be inferred. And it is not without value that the description of the Nága states in these most ancient myths discloses to us the picture of a much more perfect organisation than we find any account of in the tales of the Yakkhos. Nevertheless, we must renounce the idea of using these myths as the basis for ethnological contemplation and for building up a highly developed Veddá state in pre-historic times. If the Veddás of Bintenna were Buddhists before the time of Wijayo, the later absence of all religion among them, their preference for animal food, and many other things, are scarcely explicable.

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* Christian Lassen. Indische Alterthumskünde. Bonn, 1847. Bd. I. S., 198.

† Maháwaṇso, p. 3, cap. I.; Introduction, p. xxiv; Glossary, p. 16.

Up to a very recent date the Veddás have been a nomadic, half cave-inhabiting race of hunters. As already said a small number of them lived upon a proportionally vast tract of woodland, which without exact boundaries, but under the recognition of a kind of traditional family claim, was distributed among little groups of relations, who clung together. Each family had its special hunting-ground, to which its prerogative was acknowledged. Within this they sought honey and bees'-wax, dug edible roots, chased the game, and laid their snares for birds or fishes. Of any kind of culture, be it of garden or farm, there was no trace. They had no tame domestic animals, except the dog; and it may be questioned whether even this was not a later adoption, for according to Bailey* the species differs in no wise from the race common in Ceylon. Moreover, the dogs seem to have been trained to be watchdogs, and not for the chase.†

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* Tennent, *l. c.*, II., p. 420. † Maháwaṇso, p. 4.; Glossary, p. 18.

‡ Tennent, *l. c.*, I., p. 328.

Sir John Lubbock‡ lays much weight upon their possessing hunting buffaloes, which were so well trained that the hunter guided them by a rope slung round one horn, whilst he himself, concealed behind them, crept up to the game. But Mr. Bailey§ says expressly that this practice, which he certainly had observed in Bintẹnna, extended all over the Island: we therefore can hardly concede to the Vẹddás a claim to this invention.

Their hunting utensils are the simplest possible. They consist of a strong bow, six feet long, and from two to three arrows, three feet and a half long, whose points are of wrought iron. All the writers describe the bending of this bow as very difficult. Sir E. Tennent‖ describes the Vẹddás in a half-lying position, using the left foot to draw the bow, and gives a picture of one, according to a model carved in ebony, by one of the native wood-carvers. More recent reporters find no trace of the continuance of such a practice; they describe the bow as being drawn with the left arm, and attribute the extraordinary power and development of this arm to this practice.

Besides iron arrow-heads the Vẹddás had one iron axe—sometimes, though rarely, two, a larger and a smaller one

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* Bailey, *l. c.*, p. 286.

† Davy (*l. c.*, p. 117) says plainly, they do not use dogs for the chase, unless perhaps at *talagoyá* (iguana).

‡ John Lubbock. Pre-historic Times. London, 1878, 4th edition, p. 448.

§ Bailey, *l. c.*, p. 288.

‖ Tennent, *l. c.*, vol. I., p. 499; Note 7, vol. II., p. 439.

—principally for the purpose of cutting wax and honey out of hollow trees. These tools they obtained by barter with their neighbours. Their only achievement is shaping the arrow-heads for special uses by pounding them. But even these poor specimens of work are rare, and preserved in the family as precious heirlooms; sometimes, indeed, they make arrow-points simply of sharpened wood, ornamented with feathers of birds. Mr. Hartshorne* makes the interesting statement in connection with these facts, that the word *galrekki*, by which they denote the axe, is connected with the Siŋhalese *gala*, "stone" or "rock," and rightly finds in this a reminiscence of an earlier period, when stone weapons were in use among the Vȩddás. I am not, indeed, aware that utensils of stone have been found in Ceylon, but on the other hand I do not know that they have ever been sought for there. It would perhaps be a not unprofitable task to explore those caverns thoroughly in the hope of finding other contents, where, according to Mr. Bailey, bones of the dead are still to be found.

They subsist almost wholly on animal food. Like the Buddhists, excluding the flesh of cattle, and also (according to Sir Emerson Tennent and Mr. Bailey) that of the elephant, bear, leopard, jackal, and fowls. They eat, however, the flesh of all other birds, of the Ceylon elk (samba, *Rusa Aristotelis)*, deer *(Axis maculata)*, monkeys, pigs, iguana, and pengolin *(Manis pentadactylos)*—the last being considered the best: among fishes they prefer the eel.† All their food is cooked; as, however, they have no clay or earthen vessels, the preparation of the meat is very rough. Wolf‡ even asserted they ate the meat uncooked. At present this does not seem to be the rule; they now boil and roast their meat. They strike fire in the usual way in the East, by placing one pointed stick against the concave of another piece of wood, which they hold between the feet and whirl round rapidly.* For this purpose they use the wood of the same tree from which their bows are made—the *velanga* tree *(Pterospermum suberifolium).*

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* Hartshorne, *l. c.*, p. 408.

† In the choice of their food both classes (rock Vȩddás and village Vȩddás) are almost omnivorous, no carrion or vermin being too repulsive for their appetite. Tennent, II., p. 439. "Their food being only flesh." Knox, p. 61.

‡ Wolf, p. 117.

It would seem, however, that of late this custom of fire-rubbing had gone out of use; at least Mr. Hartshorne asserts that they now use flint and the steel of their axes or arrow-points for the purpose.

The use of any special stimulant is unknown among them; they have neither betel nor tobacco.† They drink only water, and chew a kind of bark. Even salt was unknown to them, as Mr. Hartshorne‡ informs us; but when it was given them they were much delighted with it.

Only in single places, where European influence is perceptible, do we find a rude kind of agriculture, such as is seen at the present day in Spain and in the Troas. Little strips of the jungle are burnt down and tilled ("chena"), and then again let alone for five, ten, fifteen years§; with this exception, which really cannot be taken into account, their whole existence depends upon the products of the chase. The universal recognition of this appears in their name, which, according to the almost unanimous application of the word, signifies "hunter," "archer," "one who shoots." I shall return to this later. For the present I would only lay stress on the fact that in the customs of the Vẹddás there is nothing to speak of which indicates that anywhere, or at any time, they have risen above the condition of a savage tribe of hunters.

Indeed, they have never arrived at even the very crudest form of permanent dwelling places,* although they sheltered themselves from the inclemency of the weather in the natural caverns of the country, or in simple huts† made of branches of trees and bark put together: they seem never to have made these their settled abodes.

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* A detailed description by Sir E. Tennent, *l. c.*, II., p. 451.

† In the illustration by Knox the Vẹddá is represented with a lighted pipe, but this was an unwarranted addition by the artist.

‡ Hartshorne, *l. c.*, p. 413.

§ Bailey, *l. c.*, p. 282.

On the contrary, perpetual change of place within their hunting grounds was ever the rule. Hence their social intercourse, indeed their circle of interests, is essentially limited to their nearest of kin, whose number is often very small, consisting, perhaps, of only four or five persons. All stimulant to higher requisitions and enjoyments is therefore wanting. Ambition, jealousy, love of finery, cannot thrive among them; nor, on the other hand, does the need of any sustained mental effort appear. Thus, as it seems to me, may the natural explanation be found of a list of peculiarities; indeed, also, in part of contradictory oddities.

From such a wild and inferior race of people one might perhaps expect that they would assault strangers, menace their neighbours, and live in a state of war with the more remote portions of the tribe. But, setting aside some very old tales and records of individual cases, which may be wholly disregarded, the habits of the Veddás are thoroughly peaceable. They have never even made the step from hunter to warrior. They are peaceable among themselves and towards others, so long as they are unmolested. They respect the rights of property, and are true, and, further, loving. In proportion as their life is limited to the circle of the family, family feeling is more strongly developed. Adultery and polygamy are mentioned* only where attempts have been made to civilise them, whilst among their neighbours, the Siṇhalese Kandyans, adultery and polyandry† were so common that the English Government was obliged to issue a special law for prevention. Conjugal fidelity and monogamy, as well as love for their children, were matters of course among the Vẹddás. Mr. Bailey‡ quotes the very characteristic remark of a Kandyan about them, that "they are just like wanduroos" (monkeys); and yet the women are far from being attractive, are not conspicuous by their ornaments, nor even cleanly. "They are the most ordinary specimens of the sex I ever saw," says Bailey.§ Both sexes go almost naked. In former times they wore pieces of the bark of the *riṭi* tree (*Antiaris innoxia*, or *A. saccadora*); these were later replaced by little bits of cloth, which were held fast around the body by a string. The women were distinguished by wearing round ivory pegs stuck through their ears. Mr. Hartshorne,‖ however, saw ornaments worn in the ears by both sexes—generally pearls, or what seemed peculiarly admired, empty cartridge-boxes. Evidently these are quite modern innovations; and we may without hesitation assume that, up to a comparatively recent date, perfect, unadorned nakedness was the rule, modified at the most only by a slight covering of the pudenda.

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* Knox (*l. c.*, pp. 61, 62) says of them:—"They have no towns nor houses, only live by the waters under a tree, with some boughs cut and laid round about them, to give notice when any wild beasts come near, which they may hear by their rustling and trampling upon them." He saw such places on his flight from an almost twenty years' imprisonment.

† Sir E. Tennent, *l. c.*, II., p. 439, speaks also of this, and that they sometimes slept upon stagings which they prepared in the trees. This would demonstrate habits like those to which Mr. F. Jagor calls attention in his account of the Kanikars in Hindústán. (Zuitf. Ethnologie, 1879. Verhandh. der Berlin Anthrop. Gesellsch, s. 79, Tat. 9.) On the other hand, Mr. Hartshorne asserts they are bad climbers, and possess no special capacity for catching hold with the feet. Percival (*l. c.*, pp. 284, 285) asserts on the other hand that they climb trees with the greatest expertness and celerity, and sleep on them or at their feet.

If nevertheless neither polygamy nor polyandry has been observed among them, this may be explained by the isolation of families, and the great distances which separated them; perhaps, we can in the same way also account for the other very peculiar custom among them, which has been testified to by various travellers, viz., that of marriage with a sister. It was only with a younger sister, marriage with the elder being considered unchaste. According to Mr. Hartshorne,* even marriage with a daughter was allowed, although probably this, if it occurred, as a matter of fact was not legitimated. Knox † also tells of a king of Kandy who had a child by his daughter, but none of his subjects seem to have considered this a proper relation. Bailey‡ is inclined to see in this marriage with the sister a last remnant of times outlived. This reminds us that Wijayo, the founder of the Siŋhalese dynasty, sprung from marriage in India with a sister, and that his son again, Jívahattha, whom he had begotten with a Yakkho princess in Ceylon, had married his sister, and was the progenitor of a special tribe, the Pulinda. Later, this practice was also in use among the royal families of the Siŋhalese.§ We must allow that these statements are certainly worthy of attention, but these old myths are hardly to be looked upon as positive historical facts. They seem to me only to prove that a practice which existed also in Persia and Egypt, was early permitted in Ceylon ; the reason for it was probably the same everywhere, in the royal families as with the naked Vẹddás, the lack of suitable women, or of women altogether. At any rate, it is not unchastity or licence which leads the Vẹddás to form such marriage ties. A marriage among them is usually decided by the will of the parents of the bride, who herself is allowed no choice; the only ceremony consists in the bringing of food for the parents on the part of the suitor. If under these circumstances the matrimonial tie is held faithfully and truly, it surely speaks for the purity of heart in such a wild race.

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* Gillings, *l. c.*, p. 86.

† Tennent, *l. c.*, II., p. 428.

‡ Bailey, *l. c.*, p. 293.

§ Bailey, p. 284.

‖ Hartshorne, p. 409.

On the other hand we perceive from the accounts of different observers, that there is no particular depth of feeling among the Vẹddás; all the descriptions indicate rather a certain morose indolence, which is only occasionally broken through by their love of habit. Most noticeable in this connection is an observation of Mr. Hartshorne's,* which he corroborates by a series of instances. I refer to the incapacity of the Vẹddás to laugh. Whilst they can help they not only do not laugh themselves, but despise those who do. As far as my knowledge goes, nothing like this has been told of any other race of people; only among certain idiots has this peculiarity appeared.

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* Hartshorne, *l. c.*, p. 416. † Knox, *l. c.*, p. 38. ‡ Bailey, *l. c.*, p. 310.

§ Sir E. Tennent (II., p. 459) quotes as authority for this, Valentyn, *l. c.*, cap. IV., p. 63.

In point of intellect Vẹddás seem indeed to stand very low.

According to Mr. Hartshorne† they are wholly unable to count, have no numerical words, and do not even use their fingers for the purpose. Mr. Bailey‡ does not go quite so far; he says they count with difficulty on their fingers, but he gives no numerals in their vocabulary, and relates how hard it is to make a Vẹddá understand anything which extends beyond the very next day. The Rev. Mr. Gillings§ says they could count only to a very limited extent. Davy‖

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* Hartshorne, *l. c.*, p. 410.

† Hartshorne, p. 413. "They are wholly unable to count or to comprehend the ideas of one, or two, or three, nor do they even use their fingers for this purpose; and the chief difficulty in obtaining any information from them arose from their inability to form any but the most simple mental synthesis, and from their very defective power of memory." On another occasion Mr. Hartshorne even asserts the Vẹddás had no idea of the distinction between one and two. (Journal of the Anthropological Institute of Great Britain and Ireland, 1878, vol. VII., p. 468.)

‡ Bailey, *l. c.*, p. 298.

§ Gillings, *l. c.*, p. 88.

‖ Davy, *l. c.*, p. 118. In this place the "Village Vẹddás" are spoken of. Pritchard (Researches into the Physical History of Mankind. London, 1844, 3rd edition, vol. IV., p. 193), who says the same, reports that the description of Dr. Davy refers to a large "party" of Vẹddás whom he saw during his visit to Kandy. According to their own account these people had come from the neighbourhood of the Lake of Bintẹnna, where "a little grain" was cultivated. I do not doubt the correctness of this communication, which is of great importance for a true estimate of the statement regarding the intellectual capacities of the people. But it is taken from a work of Dr. Davy's not accessible to me. Prichard cites it under the title: "History of the Island of Ceylon." In the "Account of the Interior of Ceylon" no reference is made to it, although the visit to Kandy is very circumstantially described (p. 364, sq.).

asserts they have hardly any knowledge of numbers, and cannot count beyond five. Sir E. Tennent* goes a little step further in saying they are incapable of counting over five on their fingers. Even this is after all very little, especially when we realise that these milder statements refer to the "tamer sort." Mr. Hartshorne† also contends that their language includes no word designating colour; that they have neither a fancy for bright colours nor any sense of the distinction in colours.

Finally, he complains of their defective power of memory, and their inability to form any general ideas. Sir E. Tennent says they have no notion of time or space, no words for hours, days, or years—no games—no amusements—no music. These statements, however, in their full breadth apply only to the "wild sort" of the village Vęddás. Davy‡ says that they have a rough kind of song, performed as an accompaniment to a very clumsily executed dance. When we add to all this the fruitlessness of any and every attempt to educate them, we are compelled to acknowledge the inferiority of the race. Even granting some of the observations furnished are too exclusive, it would not alter the general opinion.

It looks like a contradiction that, as Mr. Hartshorne§ informs us, they consider themselves as superior to their neighbours. This sort of contradiction is not limited to the Vęddás—narrow-minded people not unfrequently over-value their capacities. But it does sound very strange when the different reporters state that the Vęddás are looked upon even by their neighbours as members of a high—yes—of a regal caste. They are said to have been allowed in earlier times to speak of the king of Kandy as "*Hűrá*," which means "cousin." As among themselves they know of no distinction of caste, this is indeed very striking. It has even been regarded as an evidence of the correctness of the tradition that they are of royal blood, or even as Mr. Bailey* assumes, descended straight from King Wijaya himself; but where then is the posterity of those Yakkho people to be found whom Wijaya met upon his arrival on the Island? It is not possible to bring any of the other numerous races represented in Ceylon into a nearer connection with this aboriginal population.

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* Tennent, *l. c.* II., p. 443.

† Hartshorne, *l. c.*, p. 409.

‡ Davy, *l. c.*, p. 118.

§ Hartshorne, p. 412.

The earliest reporters who have spoken at any length on this subject of caste in the Island, all concur in declaring that the Vẹddás were counted as members of a higher caste.

Davy,† who enters most minutely into this matter, says that the majority of the Siŋhalese were assigned to the agricultural caste, to the so-called "Goyivaŋsé," or, as it is styled in the lowlands, "Vellála," and that to this caste also the Vẹddás belonged. Philalethes‡ makes the same statement. He explains the word *Govi* to be Siŋhalese, and the word *Vellála*, Malabar; to this caste belonged, according to him, the Vanni Vẹddás, and he speaks of two sorts—one wearing leaves upon their bodies, the other using the bark of a tree made soft by special preparation. That the later observers touch less upon this subject is explained from the circumstance that in recent times the distinction of caste has lost much of its significance among the Siŋhalese, who even in earlier times left the two highest castes, the Royal and the Brahmin, without representatives. Perhaps this circumstance also explains the peculiar usages by which the Vẹddás, who really belong only to the third general caste, have been brought into connection with the kings themselves. As late as the year 1853, the secretary of the Ceylon Branch of the Asiatic Society remarks in a note§ that the Vẹddás of Bintẹnna and of the sea coast consider themselves members of a very high caste, and call themselves Vęddá Vellálas. From these communications we see clearly that the designation "Vellála," which we find also in Hindústán, has only a hierarchical meaning, but is of no help at all toward the discovery of the relationship and derivation of the tribe.

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* Bailey, *l. c.*, p. 312.

† Davy, *l. c.*, pp. 112-15.

‡ Philalethes, *l. c.*, p. 332. The name Philalethes is a pseudonym, as Sir E. Tennent presumes (*l. c.*, Introduction, p. xx., note 5), to conceal that of the Rev. G. Bisset. This gentleman was in Ceylon at the same time with Dr. Davy, who mentions him personally, *l. c.*, p. 372, sq.

§ Journal of the Ceylon Branch of the Royal Asiatic Society, 1853, p. 89.

Another name here requires particular mention, as it is liable to introduce confusion. It is the name "Daḍa Vęddás," which is given to a division of the Ṣudra (Kshudra) caste, that being one of the very lowest classes: hunters dwelling in the wildest parts of the mountain region.*

Knox † says the lowest of the low are beggars, who are the descendants of the "*Dodda Vaddahs*, which signifies hunters;" it had been their task to provide game for the King of Kandy. When, however, instead of venison they brought him human flesh, the king had them thrust out, and given over to beggary. The detailed description which he gives of them shows that he means one of the outcasts. Davy cites two kinds of them: the Gattaru and the Roḍiyas, or Gasmandó, whom he compares with the gypsies. The latter are now usually called Roḍiyas. Of them Sir Emerson Tennent ‡ relates the same story that Knox tells of the Daḍa Vęddás, adding that a legend declares them to be a branch of the Vęddás. A still more minute description of them has been furnished by Mr. Casie Chetty. § He calls them a peculiar and distinctive race, either descendants from a colony of wandering hordes out of India, or the last remnants of an aboriginal population mixed with Siṇhalese women of high caste, who had been punished by the king with loss of caste. They live, he goes on to say, in the interior, not great in numbers,—perhaps, in all, not above one thousand,—scattered, or in special detached villages (*kuppáyam*). In the Seven Kóralés two divisions are distinguished: the *Tiringa Roḍi* and the *Halpagé Roḍi*.

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* Davy, *l. c.*, pp. 112-27. Philalethes, *l. c.*, p. 334.

† Knox, *l. c.*, p. 70. ‡ Tennent, *l. c.*, II., p. 187.

§ Simon Casie Chetty. Journal of the Ceylon Branch of the Royal Asiatic Society, 1853, p. 171.

They are more robust and athletic than the Siŋhalese, and the women frequently pretty. Both sexes allow the hair to grow its full length, and wind it into a coil. They live by the chase, and use bows and arrows like the Vẹddás; like them also they wrap their dead in mats and bury them. Although Buddhists they offer sacrifices to the *Gará Yaká* and to the *Vẹdi Yakku.* They speak Siŋhalese, but have some peculiar words, which Mr. Chetty thinks remnants of past ages. The description by Sir E. Tennent agrees with this. He visited a Roḍiya village, which lies on the pass between Kandy and the Mahawẹli-gaŋga, and gives a picture of a group of these people. He proves that the Roḍiyas were mentioned in the *Rájáwaliya* as early as 204 B.C., and in the *Mahávaŋso* 589 A.D.

According to his opinion they differ physically very much from the Vẹddás, and he is inclined to believe they had their origin on the coast of India, and belong to the Chaṇḍálas. For the rest they are only found in the Districts of Kandy. Although they may be compared to the Cagots and Caqueux of the Pyrenees, there are yet two races of outcasts in Ceylon, who were detested even by the Roḍiyas, namely, the *Ẹmbẹṭṭáyó* (barbers) and the *Hanomoreyó* (betelbox-makers) in Uva.

The existence of these outcasts is of no little importance to us in explaining the position of the Vẹddás among these complicated tribal relations. Had the Vẹddás, as many have surmised, been originally outcasts, they would surely have remained so to this day, just as the Roḍiyas have been for at least two thousand years. If they had, like the Arabs, the so-called "Moormen," subsequently emigrated, they would not be placed in the relatively high caste of Vellála, for the Moormen are in no caste, although attached to the Karáwé (fishermen), a subdivision of the Ṣudras. Unquestionably, then, the Siŋhalese must have retained a feeling of the original connection, which in spite of the religious and physical dissimilarities made them acknowledge the Vẹddás as belonging to the social order of the Buddhists. Thousands of years had not sufficed to reduce the Roḍiyas to that degree of degradation to which the Vęddás had fallen when Knox heard of them, and which is most strongly expressed in the words of Davy,* who says of the forest Vęddás that they are "rather solitary animals than social, and resembling more beasts of prey in their habits than men." We shall yet see what objections there are to our regarding the Vęddás simply as "wild Siŋhalese," and how it has happened that a great number of direct observers have thought to find their origin on the coast of Malabar. This point will be more appropriately treated of later, and after we have considered the physical peculiarities of the different tribes under discussion. It here seems in place first to bring forward the historical and linguistic observations which concern the relations of the cultivated tribes of the Island.

The natural territory for immigrants is, as aforesaid, the north-west part of the Island, which lies nearest to the peninsula of Hindústán. Here a Tamil population is established, whose connection with the Dravidian of India seems unquestionable. In the history of Ceylon we find very early mention of inroads by the Dravidian hordes. In the *Maháwaŋso* these people are called "Damilos." Since according to the testimony of the trustworthy Childers,† the word *Damiḷa* is in the Páli identical with *Draviḍa* in the Sanskrit, we may without hesitation apply to the Dravidians whatever is said of the Damilos in the *Maháwaŋso*. The English local writers generally call them Tamils or Malabars. Sir E. Tennent,‡ however, repeatedly warns us against understanding this to mean only the inhabitants of the actual Malabar coast. On the contrary, they belonged to one of the earliest organised states in the south of India, to the kingdom of Páṇḍiya, which embraced the largest part of the Coromandel coast as far as Canara on the west coast, and south down to the sea, and of which at present there remains only the little State of Madura. Later on, hordes bearing also the name of Malabars poured over the Island from all parts of the peninsula, and also from the Coromandel coast as far as to the north of Cuttack and Orissa.

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* Davy, *l. c.*, p. 116.

† R. C. Childers' Notes on the Siŋhalese Language. Journal of the Royal Asiatic Society. London, 1875, vol. VIII., p. 133, note.

‡ Tennent, *l. c.*, I., pp. 353-94.

As early as the year 237 B.C. an invasion of the Damilos in the north is mentioned, where they established a sovereignty lasting twenty-two years.[*] Scarcely were they vanquished when, under the next king of the Síhala dynasty, Aséla (about 215 B.C.), again a Damilo, of the tribe of Uja in the Chóḷa-land,[†] usurped the throne[‡] and ruled forty-four years. Although regularly defeated the Damilos ever anew repeated their invasions. In the reign of the king Mihinda (1023–1054 A.D.) the foreign population in the Island had increased to such an extent that they overpowered the aborigines, and upon a new invasion of the people from Solí the king was taken prisoner, and the country for a long time held under subjection.[§] From Malabar fresh hordes continually streamed in, and only after severe struggles was the foreign yoke thrown off. But in the beginning of the thirteenth century the Chóḷas invaded the land again.[‖] This time, however, the conquerors came from much more distant places, namely, from Káliṇga, and from the part of the Dekkan now called the Northern Circars.[¶] Their leader, Mágha, subjected and cruelly devastated the whole country from north to south, and became king of Ceylon in 1211 A.D. Later, the Siṇhalese prince succeeded in winning back again the provinces of

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[*] The Mahâwaṇso, chap. XXI., edited by Turnour, p. 127. In the same book comp. Appendix: Sovereigns of Ceylon, p. lxi.

[†] According to Turnour, Maháwaṇso, Glossary, p. 5, the Siṇhalese *Solí* is called Chóla, and probably embraces Mysore and Tanjore.

[‡] Maháwaṇso, p. 128.

[§] Maháwaṇso, chap. LXIV.

[‖] A. De Silva Ekanáyaka. Journal of the Royal Asiatic Society, 1876, vol. VIII., p. 297.

[¶] Tennent, *l. c.*, I., p. 412.

Ruhuna in the south and Máyá-raṭa in the mountainous centre of the Island; but the north of the country, the province of Pihiṭi or Rája-raṭa, the old land of the kings, remained, even as far as the Mahawęli-gaṇga, in the hands of the Tamils, and was by degrees wholly and permanently Dravidised. Only a part of this population, the Mukwás,[*] who dwell on the north-west coast, northward from Chilaw, have accepted the Christian religion.[†]

In the same way, although in a more peaceable manner, came into the country numerous Muhammadan Arabs, who since the time of the Portuguese have been called "Moors" or "Moormen."[‡] Sir A. Johnston places their arrival in the early part of the eighth century, and traces their descent from the house of Hashim, whose members were driven from Arabia by the Calif Abdul Melek ben Merwán, and settled in Southern India, Ceylon, and Malacca. But the careful investigations of Sir E. Tennent[§] have furnished evidence that the settlements of the Arabs in the Island were of much earlier date. Even when we set aside a very dark passage in Pliny, still there seems to be no doubt that at least since the first, or surely since the sixth century A.D., very extensive mercantile relations existed between Persia and Arabia and Ceylon, and that since that time many of these "Mauren" (as the Portuguese called them later) remained in the land. Sir E. Tennent considers the present Moors descended from the immigrants who intermarried with the natives. Mr. Pridham[||] divides the Moors genealogically into two groups: one he traces back to the old Arabian immigrants, who took to themselves wives from among the natives, and begot children by them; of the other, whom he calls Indo-Moors, who in greater numbers are said to have later settled in the districts of Chilaw and Puttaḷam, he gives no generic explanation, only contradicting the opinions of Mr. Cassie Chetty, that they derive their origin from a mixture of an aboriginal Hindústání population, the Sonahars, with Arabs and other Muhammadans. At any rate, however, Mr. Pridham acknowledges that no distinction any longer exists between the two groups. They are now in separate villages, portions of them scattered about over the whole Island, and are the chief medium of all mercantile intercourse, even with the Vẹddás.

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[*] A similar word (Mokna) is used in Madagascar to designate immigrant Africans. (Verhandl. der Berlin. Anthropological Societät, 1880, s. 190. Zuitf. Enthnolo. Bd. 12.) Here a Negro tribe is alluded to on the eastern coast of Africa that bears this name. (Monatsbere der Academie, 1880, s. 1017.) Possibly the coincidence in the name is a mere accident.

[†] A. O. Brodie, Journal of the Ceylon Branch of the Royal Asiatic Society, 1853, p. 50.

[‡] *Id.*, p. 40.

[§] Tennent, *l. c.*, I., pp. 546, 555, 607.

[||] Pridham, *l. c.*, I., p. 470.

Malays belonging throughout to the Muhammadan religion are to be found in the Island only in comparatively small numbers, but scattered over many regions. According to the representation of Mr. Pridham,* they are descended chiefly from the little Rájás and their followers, whom the Dutch drove either from Java, Malacca, or Sumatra, and who were later by the English taken into their regiments of natives. More important it would be for us if the opinion were correct that the original population of the Island had been Malays. This is supported by the certainly very noticeable fact that the Siṇhalese used double canoes, or boats with booms, just such as are used in all the regions inhabited or colonised by Malays, that is to the west of the Indian and Arabian coast of Madagascar.† This, however, is the only foothold for the hypothesis of an ethnic relationship.

Naturally in the last centuries the different nations of Europe, especially Dutch, Portuguese, and English, have been added to the population, but for our researches they are of no importance. The same is to be said of the African Negroes and the Parsees, the former of whom have been only recently introduced, whilst the latter immigrated at different periods, but in small numbers.

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*Pridham, *l. c.*, I., p. 482. †Tennent, *l. c.*, I., p. 327; II., p. 103 (engraving).

The southerly half of the Island, the old province of Ruhuna, and the central Máyá-land, are still peopled by the Siŋhalese,* the former by comparatively pure-blooded Siŋhalese, the latter by the somewhat more mixed Kandyans, who have been repeatedly mentioned as the immediate neighbours of the Vẹddás.

The ethnological position of the Siŋhalese has been until now discussed chiefly on linguistic grounds.

Since Rask† their language has been considered as Dravidian; Lassen‡ has sustained this opinion with the whole weight of his authority; he regarded the Siŋhalese people, according to their language, as belonging to the great family of the Dekkan tribe. Still more recently Mr. F. Müller has declared the Siŋhalese language to be an idiom akin to the Dravidian language, strongly mixed with Indian elements, which, however, differing from them genealogically, has therefore had an independent development. Hence he infers the population to be a mixture of immigrated Indians‖ with the aborigines, who seem to be of the same race as the Dravidians. Directly the opposite opinion (and one which of late is more and more generally recognised) has been maintained by d'Alwis¶ and Childers,** both of whom were employed in the civil administration of the Island. Childers, whose thorough knowledge of the Indian languages is universally acknowledged, separates the present Siŋhalese language from the ancient Ẹlu, from which, as he says, it is certainly derived, but from which it also differs through the immense number of Sanskṛit words it includes, partly unchanged, as the English of to-day differs from the old Anglo-Saxon. According to him the name of *Ẹlu* is identical with the word *Siṇ̊hala*, as the Siṇ̊halese call themselves, which borrowed from the Sanskrit is by the uneducated generally pronounced *Hiṇ̊hala;* it stands for the old word *Hela* or *Helu*, and this again for a still older *Sela*, which leads us back to the Páli of *Síhala*. The old tradition, according to which the founder of the Síhala dynasty (Wijaya) came from Láḷa, a district of Magadha (Behar) in India, agrees very well with the fact that according to another tradition Páli was originally a Magadha dialect. Páli and Siṇ̊halese are so nearly related that one might almost believe at the first glance the latter to be derived from the former, but on closer inspection we should see that Páli, in which the teachings of Buddha were written, represents only the dialect of one district of Magadha. Hence Siṇ̊halese is one of the native Aryan (Sanskrit) languages of India, and very ancient. For it is absolutely identical with the Ẹlu of the fifth and sixth centuries A.C., which is found also on the rock inscriptions of Mihintalé of the second or third century. The early establishment of the language is explained by the fact that Mahinda, at the beginning of the third century B.C., translated a Buddhist work from the Páli into the Siṇ̊halese, thereby making the latter the written language.

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* In the writing of this name I follow the explanation of it by Childers, *l. c.*, p. 37 (instead of Singhalese or Cinghalese).

† Rask. Singalesisk Skriftlaere. Kolombo, 1821, (quoted by Lassen).

‡ Christ. Lassen. Indische Alterthumskundl, I., s. 199-303.

§ Fr. Müller. Allgemeine Ethnography. Vien., 1879, s. 466, sq.

‖ Reise der Novara, O. S., 139.

¶ James d'Alwis. On the Origin of the Siŋhalese Language. Journal of the Ceylon Branch of the Royal Asiatic Society, 1867-70.

** Journal of the Royal Asiatic Society. New series. London, 1875, vol. VII., p. 35; 1876, vol. VIII., p. 131.

What place the Vẹddá language holds relatively to this is still in the highest degree dubious. In Ceylon itself the opinion has long prevailed* that it is a broken or corrupted Siṇ̊halese. Mr. Bailey† also adopted this opinion, although he considers the Vẹddás as descendants from an ancient Tamil population. But he found in their language numerous Hindú words—personal names—corresponding often to the names of Hindú gods or goddesses. Hence he was inclined to assume an early mixture of the Vęddás with the Sanskrit-speaking people of India. Mr. Max Müller* confirms the frequency of Sanskrit words in the Vęddá language; more than half the Vęddá words, according to him, are, as in the Siŋhalese itself, mere corruptions of the Sanskrit. Mr. E. Tylor† also, who considers the Siŋhalese an Aryan tongue, holds the Vęddá language for a Siŋhalese dialect, although with a mixture of Dravidian (Telugu) words. Therefore he finds a striking contradiction in that probably a non-Aryan, aboriginal tribe speaks an Aryan language. This he calls a perfectly unique instance in ethnology. Later on he repeats his thesis in the following words: "Their legends as well as their language make a mixture of Aryan blood along with Aryan language probable; whilst bodily characteristics show that the race of Vęddá belong chiefly to the native pre-Aryan type.

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* Knox, *l. c.*, p. 104. Mr. Justice Starke. Journal of the Ceylon Branch of the Royal Asiatic Society, 1853, p. 80. Gillings, *id.*, p. 84.

† Bailey, *l. c.*, pp. 297, 305, 309. He mentions especially that the so-called elk of Ceylon (*Rusa Aristotelis*) is in Vẹddá language called "gawra," which reminds one of the gaur (*Bos gaurus*) of Hindústán. But to be sure the pengolin (*Manis pentadactylos*) is also called "gal gawra."

Mr. Hartshorne‡ has again recently asserted, in direct opposition to Mr. Tylor, the entire absence of a distinct Dravidian element in the Vęddá language, and allows in it only approaches to the Siŋhalese, to the Páli, and to the Sanskrit. Mr. Cust§ contends for the reverse, objects to the idea of any admixture of Páli or Sanskrit, and holds the

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* Max Müller. Address to the First Meeting of the Aryan Section of the Oriental Congress of 1874, cited by Childers, *l. c.*, vol. 8., p. 131, note.

† Journal of the Ethnological Society of London, 1870. New series, vol. 2, p. 96.

‡ Hartshorne, *l. c.*, p. 417. "Besides the words which indicate an affinity with Siŋhalese, there are others which are allied with Páli and with Sanscrit, and an important residue of doubtful origin; but it is worthy of remark that from beginning to end the vocabulary is characterised by an absence of any distinctly Dravidian element, and that it appears to bear no resemblance whatever to the language spoken by the Yakkas of the East Nipal. A similarity may, indeed, be traced here and there between a Wedda word and the equivalent for the same idea in modern Tamil, Malayalam, or Telugu; but the cases in which comparison is possible are so rare, that these apparent coincidences may be fairly considered to be merely fortuitous."

§ R. Cust. A Sketch of the Modern Languages of East India. London, 1878, p. 63.

Vẹddá language to be simply a dialect of the Siṇhalese, which he, like the other writers, looks upon as an Aryan language.

With these disagreements in the views of linguists, we gain, unfortunately, very little from them towards a just comprehension of the phylogenetic position of the Vẹddás. On the contrary, the mystery that envelops this people, so remarkable in themselves, is vastly increased, and the purely anthropological interest comes even more into the foreground.

So far as we at present know, this people, like so many others, bears a name ascribed to them by outsiders. Mr. Hartshorne only, in a communication made by him to Childers,* asserts that they gave themselves this name (pronounced Vaeddá). The reports generally say just the contrary. The designation Vẹddá or something like it (Vedda, Veda, Vedan, Vaidan, Beda, Bedan, &c.), is widely used in India, as Mr. F. Jagor† has lately shown by a comprehensive grouping of facts. A whole series of little tribes dwelling far apart, and probably not having the least connection with another, bear this very same name, or one quite like it. The translator of Percival's work, Bergk,‡ reminds us that there are Vẹddás even in Sumatra and Borneo. At any rate, whether that word is derived from the Sanskrit (*Vyádha*, "hunter") or the Tamil (*Véḍan*, "hunter," "wood-dweller"), so much seems to be certain, that except where it is used in combination, as, for instance, in the earlier mentioned Daḍa-Vẹddá, it always relates to aborigines or savage races. In so far it stands, as Mr. Bailey§ remarks in a paragraph, with the purely literary words "Habara" (barbarian) and "Vannacharakiya" (hunter), and the like. Dr. Max Müller, who declares the correct writing of it to be Vaeddá, or originally Veadi (Vaediminitta—Vẹddá-people), agrees entirely with the derivation from Vyádhah, and Childers therefore defines the Vẹddás as "wild Siṇhalese."

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* Childers, *l. c.*, vol. 8, p. 131.

† Verhandlungen der Berliner anthropologeschen Gesellschaft, 17th Mai, 1879, s. 172. Zeitschr. füw Ethnologie. Bd. XI.

‡ Percival, a. a. O. S., 335.

§ Bailey, *l. c.*, p. 297.

How long the name has been in use is not yet clearly established. In the works of ancient Occidental writers only one passage has as yet been discovered wherein the Vẹddá name is preserved, although in a mutilated poem. In a work* ascribed, falsely perhaps, to the Bishop Palladius of Helenopolis in Bithynia (defunct 410 A.D.), which describes the journey of a man from Thebes in Egypt to Ceylon, we read *είσι δε καί οἱ Βιθσάδες ἀνθρωπάρια κολορα, μελανοκέφαλα ἄκαρτα και ἀπλότριχα.*†

Sir E. Tennent,‡ following another edition, reads **Βισάδες**; but **Βιθσάδες** is more like the word Vẹddá. Since the further description likewise suits the Vẹddá right well, we may conclude that here the name was for the first time transmitted to the Occident. Before this we only hear that Megasthenes in the time of Alexander knew§ of "Palæogonen" upon the Island, which signifies, according to Sir E. Tennent,|| "Paliputrá" (sons of Pali); but according to Lassen,¶ referring to the Rákshasas, or giants. In the first case it should apply rather to the Siṇhalese, in the latter to the Vẹddás (though certainly not in the sense of giants). The inland writers do not use the name of Vẹddás until much later.

Mr. Hartshorne,** on the authority of an ancient ola (a book written with a stilus upon palm leaves) which was

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* Παλλαδίου περὶ τῶν τῆς Ινδιας καὶ τῶν Βραγμάνων. Palladius *De gentibus Indiæ et Bragmonibus*. London, 1668, p. 5.

† Tennent gives *μεγαλοκέφαλα* instead of *μελανοκέφαλα*, as read in the edition from which I have quoted, although the first perhaps seems more consistent. I must remark that the Latin translation given in the edition of 1668 is *capite nigro*.

‡ Tennent, I., p. 538, note 2; II., p. 438, note 6.

§ Plinius. Natural History. lib. 6., cap. 24.

|| Tennent, I., p. 529.

¶ Lassen. De Taprobane Insula, p. 9.

** Hartshorne, *l. c.*, p. 414.

in the possession of one of the Kandyan chiefs, states that King Dutugemunu (160 B.C.) appointed the Vẹddás servants of the god Skanda, in the temple Kataragama Déwâle built by him, on account of the purity of their caste. As, however, the age of the ola is not known, we can draw no sure conclusion from this statement. Only the fact that here again the purity of caste is emphasised must make us cautious about looking upon the Vẹddás as a mixed people. When we consider for how long a time, and with what scrupulous care, the people of India have matured and preserved the distinction of caste, *the fact that they have acknowledged without exception the unity and purity of such a wild tribe* must surely appear of great significance.*

Indeed, all inquirers testify to the unmixed character of the tribe. The different names which have been given to separate divisions do not indicate different tribes, but geographical and topographical distinctions. Thus the Tamils distinguish the "Maṇalkádu," or sandy jungle Vẹddás, from the "Cholaikkádu" Vẹddás, that is, those living on the sea coast, who speak Tamil and till chena land, from those yet leading a nomadic life, who, as they say, are quite different from the others, have preserved much of their original barbarism, and inhabit the more remote parts of the Bintẹnna district. At any rate, this distinction is not to be understood as referring to typical differences in the tribe.

From the preceding we gather that up to the present time two leading views stand opposed to one another, which are mainly supported by linguistic observations, and only in part by genuine anthropological facts. According to one, the Vẹddás would be next of kin to the Dravidians; according to the other, members of the great Aryan family. In both cases they must have immigrated from the continent, only in the first very much earlier than in the second. I find only one single conjecture mentioned of any such immigration. The

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* Hartshorne, *l. c.*, p. 406.

† *Id.*, *l. c.*, p. 411.

Rev. Mr. Gillings* repeats the story that the Vẹddás originally formed a part of a Siŋhalese community living on the sea coast of India, and that from there they had been transported for certain offences over to the Island at a very early period, and before the Siŋhalese, as a people, had set foot on its shores. But we do not find it said anywhere that such a Siŋhalese community had existed on the Indian coast. Moreover, the Vẹddá language, if any such separation from a common Aryan family had so early taken place, must have retained certain peculiarities belonging to that earlier period of development; and of this also nothing is known.

The explanation should be much simpler, if one might assume that the Vẹddás were originally of the Dravidian race, or at least nearly related to the Dravidians; or even if different from them, at any rate, a savage aboriginal tribe; and that they only received their present language subsequently from their Aryan conquerors. With such an assumption the identity of this language with the Siŋhalese, which is defended by authorities, would be supported without an effort. But it cannot be denied that it is difficult to conceive how the process of Siŋhalesing the language could have been accomplished, whilst their whole way of living, their customs and habits remained wholly unchanged.

In the name chosen by Childers of "Wild Siŋhalese," little is gained. If it means savages with a Siŋhalese language, we have a fact given us, but no explanation. If, on the other hand, it means Siŋhalese who have become savage, we should then, with our explanations, have to fall back on some period after Wijayo, and contrary to all common experience be forced to add the hypothesis (against which I protested in a former passage) that the Vẹddás from a high state of comparative civilisation, such as plainly had once been attained by the Siŋhalese, have sunk to the lowest level of human existence. Religion, political organisation, civil life, all the arts and customs of firmly located tribes have been lost, indeed, forgotten, and that, too, while in closest proximity—even in direct contact—with a people who had passed through a long and eventful history. Such a degradation is not conceivable, unless we can prove at the same time very deep physical demoralisation.

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* Journal of the Ceylon Branch of the Royal Asiatic Society, 1853, p. 84.

From whatever side we consider the problem, we must always come to the conclusion that linguistics can only be used as aids in the investigation ; and that if a real solution is to be found, it is only possible by means of physical anthropology. What I have to offer in this direction is nowise adequate to lead on to a full solution, but it will perhaps contribute in reducing the possibilities of explanation to a small number, and thus prepare the way for a final decision. At the same time my hope is that these suggestions will stimulate to new labours, especially, in the Island itself, that, if possible, even at the last hour every effort shall be made to obtain a correct description of the last remnants of this fast dying out people.

The hitherto ascertained facts regarding the physical peculiarities of the Vẹddás are the following :—

Even the description of Βιθσαδες· (βισάδες) furnishes truly characteristic features. The principal passage has been already quoted : smallness and feebleness of stature, heads black and apparently large, with long, smooth unshorn hair.* Added to this is the further statement that the people dwelling in the rocky caverns are the smallest (πάνυ σμικρότατον καὶ ἀδρανέστατον), and that they are very agile in climbing the precipices.

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* The bad Latin translation of this, which is ascribed to the Holy Ambrosius, in the reprint appended to the above-cited edition of Palladias (S. Ambrosius *De moribus Brachmanorum*, p. 59) : Nam et ipsos exiguos homunculos esse et grandia quaedam capita asserit habere cum levibus et detonsis capillis. Here, therefore, once more is the supposed manner of reading *μεγαλοκέφαλα*.

Knox, as already cited, saw in his flight through the woods of the Vęddá country no human beings, only empty dwelling places. Hence the picture contained in his book represents a man differing from the likenesses of the Siŋhalese in look only, by his shorter and more thickset figure; he wears the hair and beard noticeably long like the Siŋhalese, the former being gathered into a knot on the back of the head.

Percival,* 1798, saw some captive Vęddás in Colombo. According to his representation, they were of lighter complexion than the rest of the Ceylonese, being rather copper coloured, were remarkably well-made, wore long beards, and their hair tucked up close to the crown of the head.

Valentyn† says the Bedas, or Wedas, are a kind of wild bushmen, and the oldest inhabitants of the Island: "Zvortvan berwe, beandend van Oogen, niet groot van gestalte, maar gezeten rad van Lieden." To these very broad statements, followed at last by John Davy‡ the first definite scientific description resting on autopsy. He says: "Such of the village Weddhas that I have seen were in general small men, between 5 ft. 3 in. and 5 ft. 5 in. high, slender, muscular, and well made; in colour, form, and features resembling the Singhalese. Their appearance was wild in the extreme, and completely savage......Their hair was quite emblematic of their forests: it seemed never to have been cut, or combed, or cleaned; and was long, bushy, and matted, hanging about their shoulders, and shading their faces in a very luxuriant and disgusting manner; nor were their beards less neglected."

Sir Emerson Tennent§ gives the following general description of the Vęddás in the region of Bintęnna:—"They all presented the same characteristics of wretchedness and dejection—projecting mouths, prominent teeth, flattened noses, stunted stature, and other evidences of the physical depravity, which is the usual consequence of hunger and ignorance. The children were unsightly objects, entirely naked, with misshapen joints, huge heads, and protuberant stomachs. The women, who were apparently reluctant to appear, were the most repulsive specimens of humanity I have ever seen in any country." Pridham[*] gives the report of Mr. Bennett, who, during his residence at Hambantoṭa, had two village Vẹddás brought before him. The latter says of them: "They were not more than 5 ft. 2 in. in height, their hands small, but their feet were long and flat; hair matted and tied in a bunch at the back of the head; a large bushy beard, almost covering the face; eyes small, piercing, and constantly in motion to the right and left, and their ears seemed almost as restless as their eyes."

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* Percival, *l. c.*, p. 283. † Valentyn, *l. c.*, bl. 49. ‡ Davy, *l. c.*, p. 116. § Tennent, *l. c.*, II., p. 450.

If from these general descriptions we come to details, we observe that all the accounts agree first in this, that the average stature of the Vẹddás is small, not to say very small. Dr. Davy (in the citation by Prichard) says of them: "They are well made and muscular, but of a spare habit; and in person they chiefly differ from the Kandyans in the slightness of their limbs, the wildness of their looks, and their savage appearance." Gillings declares: "The Veddahs are mostly low in stature, but some of them are strong, active men, and most of them appear to be healthy, and little subject to disease." The description of Mr. Bailey[†] is to this effect: "In appearance the Veddahs differ materially from the Singhalese. They are smaller in every respect, and rather dark, or, more properly, more dusky in complexion. They are short, slightly built, yet very active. Though far from being muscular, their limbs are firmly knit together, and they are athletic and capable of enduring great fatigue. Though spare, they are generally in very fair condition, and look more healthy than many of the Singhalese in the adjoining districts." He measured several of them. The tallest man, and one towering considerably above his fellows, was only 5 ft. 3 in. in height; he was a more civilised Vẹddá from Bintẹnna. The shortest whom he saw measured was 4 ft. 1 in. He considers the average height of the men from 4 ft. 6 in. to 5 ft. 1 in., and the women from 4 ft. 4 in. to 4 ft. 8 in. In a list of measurements taken at his suggestion, two men are reported as 5 ft. 3 in. and one as 5 ft. 3⅖ in. If these measurements are correct, they exceed, in his opinion, the average measure. Among fourteen Vẹddás of Bintẹnna, the tallest was 5 ft. 3⅖ in., the shortest 4 ft. 6¼ in.; the medium was about 5 ft. ½ in. Of twelve women, the tallest was 5 ft. 2½ in., the shortest 4 ft. 4½ in., the medium about 4 ft. 9 in.

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[*] Pridham, *l. c.*, I., p. 460.

[†] Bailey, *l. c.*, p. 282.

Mr. Hartshorne* gives only two measurements of persons, whom he believes to be fairly average specimens of the race. One of them, Latty, eighteen years of age, was 5 ft. 4¼ in. in height; the other, Bandiey, about twenty-five years old, measured 4 ft. 11¾ in.

If we reckon this in metres, we have the following:—

| | | |
|---|---|---|
| The tallest man | ... | 1,638 mm. |
| The shortest man | ... | 1,245 mm. |

The medium, according to measurements taken in Bintẹnna:—

| | | |
|---|---|---|
| For the men | ... | 1,537 mm. |
| For the women | ... | 1,448 mm. |

The conclusion to which we arrive is that the Vẹddás are a very small, not to say dwarfish, race.

In reference to details of the size, the majority of observers in reality present no facts which indicate disproportionate or imperfect development of the separate members of the body. Only Mr. Hartshorne, who characterised the general appearance of the Vẹddás as "distinctly non-Aryan," asserts that they have short thumbs and sharp-pointed elbows. It would be very satisfactory if these accounts could be corroborated by fresh observations.

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* Hartshorne, *l. c.*, p. 408, note.

The complexion of the Veḍdás is dark,—according to most reports, darker than that of their neighbours, the Siṇhalese, of whom Davy says, that their colour varies from light brown even to black. Bailey speaks of the colour as dark, or rather dusky, by which, at any rate, a very deep shade is meant.

The hair of the head and beard Davy describes as long and matted; it is never cut or combed. Sir E. Tennent* says: "Their long, black hair and beards fell down to their middle in uncombed lumps." Sirr† reports that "their hair, beards, and whiskers are never shorn or cleansed, and these redundant tresses hang over their shoulders and bosom in matted masses." Bailey calls the beard "short and scant; the hair of the head, which is not curly, falls in rusty, tangled masses about the face," making the head appear disproportionately large. Later, he speaks of "their wild shaggy hair." When one sees the people, he says, with their rugged, uncombed locks half-covering their faces, they fully represent a preconceived idea of barbarous savages. Hartshorne‡ calls the hair of the head "coarse" and "flowing," and considers it necessary to add that their bodies are by no means hirsute, and that there is no tendency of the hair to converge towards the elbows, or to diverge from the chin, or *vice versâ.*

Through the kindness of Mr. Bastian, two photographs have been sent me of a company of Veḍdás, which he obtained in Colombo. They represent three men and three women in full figure, but unfortunately of too small a size to give a clear idea of them. This was the party, it seems, presented to the Prince of Wales on the occasion of his visit to the Island. Mr. Hartshorne, who, to be sure, only speaks of two men and three women, is of the opinion that they came from the district of Batticaloa, where the few Veḍdás still remaining, partly through the influence of the missionaries, partly through marriage with the Tamils, have lost many distinctive features of their primitive state. "Two of the women," he says, "were very gentle in appearance, and one is reported to have been decidedly pretty; the two men were described as small and rather ape-like." To these descriptions the photographs aforementioned correspond pretty well.

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* Tennent, *l. c.*, vol. II., p. 449.

† H. Ch. Sirr, Ceylon and the Siṇhalese. London, 1850, vol. II., p. 210.

‡ Hartshorn, *l. c.*, pp. 408, 409.

Though these may not be examples of the purely savage Vęddás, I have nevertheless, in lack of any other representations, asked Mr. Mützel to make a drawing of two men and one woman, from which a woodcut* has been prepared. It shows plainly the growth of the hair; the noses comparatively short, broad at the end, and flattened; the eyes apparently deep-set, and the lips of the younger persons full and bulging; so that it gives a far more vivid idea of the people than any description could furnish. One only of the men has anything like a beard. We see the little apron worn by the men, the great bows they carry, the arrows with the leaf-shaped points, and finally the iron axe stuck in the girdle.

As regards the hair, it is comparatively long with all the six persons, but evidently put into some shape by the help of a comb. The women wear their smooth, slightly waving hair parted in the middle, and so does one of the men, who certainly exhibits his *chevulure* in a somewhat disordered condition. Two of the men have curly hair, which forms a bush about the head, sticking out widely and falling down upon the neck, exactly corresponding to all the known descriptions of them. This makes the head appear very large, especially in proportion to the lean body and limbs. But it must here be particularly remarked that this curly hair is never in small, tight rolls as among the Negritos, and the bush of hair does not in the slightest degree approach the peruke, such as is generally worn by the Viti people, or the Abyssinian tribes; on the contrary, the curly hair is very long, and falls down pretty low upon the neck, and it is therefore out of the question to talk of woolly hair. It is a comparatively smooth, simply wavy hair, occasionally curly, but remarkable for its length, and just as Palladius describes it, in a most pregnant manner, ἀκαρτα καὶ ἀπλότριχα. We must here add that he expressly contrasts these smooth-haired people with the Indians (Negroes), whom he calls φριξότριχες. Of the eyes, Davy only mentions that they are lively, wild, and restless. Valentijn calls them burning. Bailey speaks of them as "good, and often full." Only Mr. Bennett asserts that they are small, which probably means deep-set. With regard to their colour, I find nothing said. But the statements are sufficient at any rate to prove to us *that the Vẹddás are a dark, but not actually black, race, and not woolly-haired like the Negro.*

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* Not reproduced here.—*Hon. Sec.*

Hartshorne says of the noses, like Sir E. Tennent, that they are flat; and of the lips, that they are sometimes thick. If we add to this their short thumbs and sharp-pointed elbows, there are indications enough by which to distinguish them in a noticeable degree from the Oriental races living in their neighbourhood. Bailey calls the nose "well-shaped, though inclining to be flat; the nostrils wide; the mouth sometimes large; and the lips firm, but rather thick;"—the features of the face, on the whole, "tolerably regular." Sir E. Tennent describes the mouth as "projecting," and the teeth as "prominent."

Before comparing this picture with that of any other of the neighbouring people, I will add some craniological observations. By an especially happy accident I was enabled myself to examine three Vẹddá skulls. I had applied to the German Consul in Colombo, Mr. Ph. Freüdenberg, when he was here, to obtain, if possible, skulls from Ceylon, and especially of the Vẹddás. He wrote to me on February 27, last year, that he was sorry he himself could not do this; but that the Governor and Committee of the Museum in Colombo had declared themselves ready to send here as a loan for six months any skulls I might wish to have from their Museum.

These arrived in the summer, accompanied with a note from Mr. A. Haly, the Director of the Museum in Colombo. To all these gentlemen I would express my most sincere thanks for their very great kindness in thus furthering my wishes. I will proceed to give a brief description of the skulls.

### *Skull No. 1.*

Mr. Haly appends to it the following note :—

"Presented by Mr. W. W. Hume, Government Agent, Southern Province.

"This skull is said to be that of a Vẹddá woman, and was found at Dewilanè near Batticaloa, but there seems to be no evidence to show that it is a Vẹddá skull."

Plainly a woman's skull, very white, smooth, and of little capacity (1,250 cub. cm.), with teeth much worn away. Whether an under-jaw belongs to it is questionable, for although the condyloid processes of the one fit tolerably, it yet appears somewhat too short; hence it is omitted in the drawing.* The capsule of the skull is long, narrow, and flat, of a pronounced dolichocephalous index (70·9). The brow is quite straight, but not high, without marked orbital prominences, but with strong *tubera ;* the *glabella* not much sunk, and at the nasal process remnant of the frontal suture one centimetre long. The curve of the parietal bone appears long at a side view; so also the narrow backhead. The *norma occipitalis* shows a slightly ogivalous form, but has, on the whole, a rounded outline narrowing toward the bottom. On the high and pointed *squama occipitalis* we find no distinct *protuberontia externa,* but strong cerebellar arches.

The sutures are well preserved and pretty deeply indented. On either side are temporary interpolations of bone ; to the right an oblong bone extending the whole length, with a slight degree of stenokrotaphy and low *angulus parietalis ;* to the left an imperfect bone, but only in the posterior half of the sphenoparietal suture, beside which the point of the

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* The drawings of the skulls are not reproduced.—*Hon. Sec.*

*ala sphenoidealis* comes up high, whilst the *angulus parietalis* is low; likewise in the under part of the lambdoidal suture on either side and on the posterior lateral fontanel interpolation.

A view of the skull from below shows plainly the length and narrowness of the occipital region. The very large *foranen magnum* is injured at the posterior edge, but can be measured approximately. The articular processes of the occipital bone are situated quite anteriorly, and their fascets turned rather to the outside. Small mastoid processes.

In the front view the forehead appears comparatively broad, the face short and of moderate breadth. Index 83·1; therefore chamæprosopic. The very large orbits are likewise broad and extended toward the outside and the bottom, but on the whole rather round in form. Their index amounts to 84·6, and therefore mesokonch. The cheek bones project, and the canine *fossæ* are correspondingly very deep; on the other hand, the zygomatic arches are not very prominent. The nose is rather high on the face, and somewhat to one side, narrow at its root, the ridge bent in, the aperture large. Index 50, therefore mesorrhine. The upper jaw is, on the whole, low, especially at the alveolar process, which is slightly prognathous; the facial angle (brow-nasal spine and auricular orifice) measures 82. The palate long and broad toward the back, the alveolar line somewhat in the form of a horseshoe, and the teeth and the alveolar cavities, especially in the front, large. Index leptostaphyline, 75. The (questionable, therefore omitted in the drawing) under jaw, small and low, the rami slanting and feeble, and particularly narrow. The distance of the maxillary angle amounts to only 85 mm., or 10 mm. less than the lower frontal breadth.

### (2).—*Skull No. 4.*

Mr. Haly designates it as evidently abnormal, and says of it and the following (No. 5): "They were procured by the Rev. S. Somanader, the Vẹddá missionary at Batticaloa. There is a lower jawbone, but I do not know to which skull it belongs. Mr. Somanader guarantees these as being the skulls of absolutely pure-blooded Vẹddás, a race, he says, now almost extinct."

The skull, in all probability female, is without a face. Perhaps there belonged to it a senile under-jaw with totally obliterated alveolar cavities, perpendicular and delicate rami and condyles, which, by *arthritis chronica senilis*, are changed ; the skull, however, does not give the impression of having belonged to such a very old person. This skull is unusually small ; its measure inside is only 1,025 cub. cm.; it is therefore almost nannocephalous. It is, beside being very crooked, especially depressed on the left side posteriorly, short, though rather broad and high. The index amounts to 80·6 ; it is therefore brachycephalous. The reason for this abnormity is probably an artificial, or accidental, deformation ; for although it has a *synosteosis* of the under coronal and the spheno-frontal suture, the main aberrations are in the occipital region. The other sutures are much indented. The *squama occipitalis* is very high, and the lambdoidal angle acute ; no *protuberantia externa*. *Tubera* on the brow and parietal bones strongly developed ; the brow much arched. *Orbitæ*, so far as their form is recognisable, very large.

### *Skull No. 5.*

This is a male skull, unfortunately also without a face, but in all other respects quite uninjured. Its capacity is considerably greater (1,360 cub. cm.) than that of the two female skulls, but in itself not large. The surface is covered with distinct traces of muscle, especially the back head, where the *facies (muscularis squamæ occipitalis)* show very deep impressions : the *protuberantia externa* is unusually strong and hooked in form, and the *linea semi-circularis superior* makes a strong V-shaped projection. Also the nasal and orbital prominences are strong, although not specially large. The capsule of the skull is distinctly dolichocephalous, with an index of 73, showing in a side view a long finely-arched curve, with full high brow and round, strongly projecting back head. The sutures are well preserved; only the under portions of the coronarie and the *spheno-frontalis* are synosteotic. In spite of this the temporal regions are on the whole well formed. From a posterior view this skull also has an ogivalous form, yet with greater breadth of basis. The *squama occipitalis* is high, and the lambdoidal angle very acute. The cerebellar arches large. At the basis the occipital region appears unusually long. The *processus condyloides* are very prominent, and the articular facets turned decidely outward. The mastoid process strong. In a front view the forehead appears broad; the nasal root somewhat deep, but narrow; the bridge of the nose erect; the *orbita* large and slightly rounded; the zygomatic arch not prominent.

Although Mr. Haly says there is no proof that skull No. 1 is a Vẹddá skull, yet I see no reason why it should not be considered as such. Batticaloa is, as we learn from the preceding accounts, known to be the old Vẹddá region; and the statement of Mr. Hume that it is the skull of a Vẹddá woman must have been founded on distinct circumstantial evidence. Certainly it is the skull of a woman; and since also it coincides with other Vẹddá skulls, I do not scruple to accept it as such. The circumstance that there is nothing about it corresponding to the usual idea of the skull of a savage cannot be of any weight, since the rest of the skulls also impress us as being comparatively delicate, not to say civilised. This is a peculiarity which belongs to different unquestionably savage inhabitants of the Eastern Archipelago, and which is especially conspicuous among the Andamanese, the Negritos of the Phillipines, and many other savage tribes in the mountains of Hindústán. The origin of the two other skulls is so clearly testified to by the missionary of that region, Mr. Somanader, that there is no room for doubt.

For comparison we have a not inconsiderable number of apparently well-ascertained skulls now to be found in

England. Of these, eleven were in possession of Mr. Barnard Davis, who has given notices of them in his "Thesaurus Craniorum": London, 1867, p. 130. Among them are four, likewise from Batticaloa, two from Badulla, and two from Uva. Some are damaged, and must therefore be set aside in our examination. Nine other Vęddá skulls are found in the great anthropological collection in the Hunter Museum; their measures have lately been published by Mr. W. H. Flower in his "Catalogue of the Specimens Illustrating the Osteology and Dentition of Vertebrated Animals contained in the Museum of the Royal College of Surgeons of England": London, 1879, Part I., p. 111. Among them are also those which Mr. George Busle (Proc. Linn. Soc., 1862, vol. 6, p. 166) has earlier described. Of two of these it is stated that they are from Nilgala. The two last and the one from Bintęnna (Badulla) are furnished by Mr. Bailey. A picture of one of the men's skulls from Bintęnna (No. 675) is given in the work of the Messieurs de Quatrefages and Hamy, "Crania Ethnica," Paris, 1876-77. Of two others (Nos. 681 and 682), it is especially said that they may be considered authentic specimens.

In all, we have then, twenty-three skulls for comparison. Among them there is, beside the above-mentioned deformed skull (No. 4) from the Museum at Colombo, another from the Hunter Museum (No. 676), one from the Bailey collection, brought from Bintęnna, of which it is expressly asserted that "it has been unsymmetrically distorted by occipital pressure." These two must, therefore, be excluded from certain examinations. The rest of the anomalies, however important they may be, can in the main be passed over. I will only briefly call attention to the fact that the skull I have described, No. 1 from the Colombo Museum, shows some temporary aberrations, especially interpolations of bone, and also that the skull represented by the Messieurs de Quatrefages and Hamy, No. 675, out of the London Museum, shows distinct stenokraphy.

The total result obtained is, first, that the Vẹddá skull is uncommonly small, and that occasionally genuine nannocephaly appears in the race.

Of the deformed skull out of the Colombo Museum (No. 4) I have already pointed out that it possessed only a capacity of 1,025 cub. cm. Mr. Flower has discovered even a smaller one, that of an adult woman (No. 679), which measures only 960 cub. cm., and of which he says "that is the very smallest in the whole collection." Here we must particularly remark that it is not a question of microcephaly, in the pathological sense, but of crania justo minora. In order to avoid confusion, I have therefore chosen the name, which I have suggested in an earlier essay, of nannocephalous.

I give in the following a list of some of the measurements, as the fact just signalised is of special importance for the cognisance of races. Regarding the skulls of Mr. Bernard Davis, the first column shows the weight of the sand used in measurement, as given by him; the second and third columns give the reduction of the weights into measures, according to the table made by Mr. Weleker :—

I.—Statements of Mr. Davis.*

| No. | Weight. oz. | Men. cub. cm. | Women. cub. cm. |
|---|---|---|---|
| 1 | 64 | 1,275 | — |
| 6 | 70 | 1,394 | — |
| 7 | 56 | — | 1,115 |
| 8 | 65 | — | 1,295 |
| 9 | 64 | — | 1,275 |
| 10 | 81 | 1,614 | — |
| 11 | 59 | — | 1,175 |
| 12 | 72·5 | — | 1,444 |

| | | |
|---|---|---|
| Average of | 3 men's skulls | 1,428 cub. cm. |
| Do. | 5 women's skulls | 1,261 „ |
| Do. | 8 Vẹddás' skulls | 1,323 „ |

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* Virchow, "Gesammelte Abhandlungen zur wissenschafhlichen medicin." Frankfurt, A.M., 1856, *s.* 901.

### II.—Statements of Mr. Flower.*

| No. | Men. cub. cm. | Women. cub. cm. | Uncertain. cub. cm. |
|---|---|---|---|
| 675 | 1,140 | — | — |
| 676 | — | 1,225 | — |
| 677 | — | — | 1,235 |
| 678 | — | 1,250 | — |
| 679 | — | 960 | — |
| 680 | 1,225 | — | — |
| 681 | 1,260 | — | — |
| 682 | 1,420 | — | — |
| 683 | — | — | 1300 |

| | | |
|---|---|---|
| Average of | 4 men's skulls | 1,261 cub. cm. |
| Do. | 3 women's skulls | 1,145 „ |
| Do. | 2 uncertain skulls | 1,269 „ |
| Do. | 9 Vẹddás' skulls | 1,224 „ |

### III.—My own Statements.

| No. | Men. cub. cm. | Women. cub. cm. |
|---|---|---|
| 1 | — | 1,250 |
| 4 | — | 1,025 |
| 5 | 1,360 | — |

| | | |
|---|---|---|
| Average of | 3 Vẹddás' skulls... | 1,211 cub. cm. |
| Do. | 20 Vẹddás' skulls... | 1,261 „ |
| Do. | 8 men's skulls | 1,336 „ |
| Do. | 10 women's skulls | 1,201 „ |

Only two men's skulls, viz., No. 10 among Mr. Davis's and No. 682 among Mr. Flower's, exceed 1,400. The first measures 1,614 cub. cm., and is called by Mr. Davis himself "abnormally large"; the other measures 1,420 cub. cm. All the rest of the measurements given are much less,—three between 1,100 and 1,200 cub. cm. and eight between 1,200 and 1,300 cub. cm. The average of 1,261 computed above may, therefore, be esteemed a pretty fair measure.

The amount of the variation is particularly worthy of attention. If we take the two extremes, the woman's skull of 960 and the man's of 1,614 cub. cm., we have a difference of 654. The different ways of measuring may possibly have increased the difference a little, but not enough to be of any importance.

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* Archiv. für Anthropologie. Bd., *l. s.*, 272.

The length measures stand in a close, but nowise simple, relation to the capacity. In regard to the horizontal extent from the reports of Mr. Davis, I calculate as the average of three male skulls 19·9 English inches = 506 mm., the average of eight female skulls 19 in. = 483 mm., and the average of thirteen skulls altogether 19·2 in. = 488 mm. From the figures given by Mr. Flower accrues an average from five male skulls of 485, of two female skulls of 454, and of seven skulls altogether 476 mm. From my measurements accrues for three skulls an average of 486 mm., a figure pretty near to the others. From all the twenty-three skulls I calculate an average of 484 mm.; from Mr. Davis's skulls and mine, sixteen altogether, an average of 487 mm. The lowest measure (448) was found by Mr. Flower with the nannocephalous girl, the highest (512) with a man; so here too we have a difference in the extremes of 64 mm. The skulls I have described prove here also absolutely typical.

The measurement of the vertical line (right across the head) admits of no exact comparison, since my measure extends from one auditory passage to the other, that of Mr. Davis from the base of one mastoid process to the base of the other. Mr. Flower has not given any vertical lengths whatever. According to my measurements the vertical extent is comparatively small, on the average only 289 mm., which is 197 mm. less than the horizontal extent, of which it is only 5·94 per cent. This figure shows most clearly the narrowness of the skull.

It is very difficult to measure the upper vertical extent (sagittal from the root of the nose across the parietal bone to the *foramen occipitale*) which differs, according to our two statements, in the whole as well as in the single parts. It amounts on the average :—

| | Davis.<br>mm. | | Virchow.<br>mm. |
|---|---|---|---|
| Frontal vertical extent | 124·5 | ... | 123·0 |
| Parietal ... | 127·0 | ... | 121·0 |
| Occipital ... | 114·3 | ... | 111·0 |
| Whole sagittal arch ... | 365·8 | ... | 355·0 |

Average ... 360·4 mm.

or reckoned by the percentage of the entire sagittal arch:—

| | mm. | | mm. |
|---|---|---|---|
| Frontal vertical extent | 34·0 | ... | 34·6 |
| Parietal ... | 34·7 | ... | 34·0 |
| Occipital ... | 31·2 | ... | 31·2 |
| | 100·0 | | 100·0 |

Here the figures agree at least as far as regards the share of the *squama occipitale* in the formation of the roof of the skull: they show that to the *squama* belongs a considerable share, almost a third, and this may well be looked upon as a characteristic.

The relation of the extent in length to the horizontal extent varies only a little in the two measurements. It amounts by mine to 73·0, by Mr. Davis's to 74·9, on the average 74·5 per cent. of the horizontal extent, which, compared with relation to the vertical extent, is a very considerable figure.

Much more homogeneous are the results of the measurements in regard to the form of the head.

The average index of ratio between length and breadth is decidedly dolichocephalous. It amounts with:—

| | | | mm. |
|---|---|---|---|
| Mr. Davis, from 10 skulls, to | ... | ... | 71·3 |
| Mr. Flower, from 8 skulls, to | ... | ... | 71·9 |
| Myself, from 2 skulls, to | ... | ... | 71·9 |
| Total from 20 skulls | ... | ... | 71·6 |

We have here omitted to bring into the account the two before-mentioned deformed skulls, which have a brachycephalous index; the one in the London Museum has an index of 82·9, the other from the Colombo Museum of 80·6.

To these must be added the skull of a girl of Batticaloa, about eighteen years of age, and now in the possession of Mr. Davis (No. 803), which he himself calls an "aberrant example," with an index of 78. To what cause due one cannot conceive from the description, since the only thing mentioned about it is that it has a *processus papillaris* before the *foramen magnum*.

Possibly deforming influences were at work among the female Vẹddás to a greater extent, though in a less noticeable manner. At least we calculate from the figures of Mr. Davis, even omitting the probably deformed skull, a higher index for the female than the male skulls. Mr. Flower and myself, however, arrive at the opposite result, excluding the deformed skulls, viz.:—

| | | Davis. | | | Flower. | | | Virchow. |
|---|---|---|---|---|---|---|---|---|
| | | mm. | | | mm. | | | mm. |
| For Men ... | (3) | 69·6 | ... | (5) | 70·9 | ... | (1) | 73·0 |
| For Women ... | (6) | 71·0 | ... | (1) | 69·9 | ... | (1) | 70·9 |

In taking the average of the two sexes together, however, the difference disappears, as then Mr. Flower's and my own lower figures count for something, viz.:—

| | | | mm. |
|---|---|---|---|
| Men ... | 9 skulls | ... | 70·7 |
| Women ... | 8 skulls | ... | 70·8 |

At any rate, we have among the number (twenty in all) which come into the calculation, only four belonging to mesocephaly (index of 75 : 1—80). Among the remaining sixteen, however, are seven whose index amounts to something under 70, which are therefore hyper-dolichocephalous. The minimum amounts to 66 (Davis). Quite correct also was Mr. Davis in saying (*l. c.*, p. 132) that the Vẹddá skulls are narrower than those of African Negroes, and sometimes as narrow as those of the New Caledonians. The relation of the single parts of the skull to the whole length = 100 is somewhat different. With the male skull No. 3 the horizontal length of the occipital region is greater, and the frontal basilar length less. If we indicate the relation of the occipital length to the whole length by *a*, and that of the basilar length (outer edge of the *foramen magnum* to the root of the nose) by *b*, we obtain for the skull :—

| | No. 1. | No. 2. | No. 3. |
|---|---|---|---|
| | mm. | mm. | mm. |
| *a* | 28·2 | 27·8 | 32·4 |
| *b* | 51·9 | 55·1 | 48·6 |

Corresponding to the smallness of the skull, the greatest length is throughout little: dolichocephaly is less indicated by great length than by want of breadth. Among all the skulls there is only one—a male skull (Davis, No. 805)—which has a length of 190 mm. (76 English inches). With all the rest it is less, with the majority not more than 180. The greatest breadth, likewise, comes up in only one skull to 140 mm.; the next highest figure is 135—the measure of the male skull from the Colombo Museum. But the majority do not even reach 130. All the more extraordinary is the relatively considerable height. Only twice do we find height less than the breadth. The skull (No. 683, Mr. Flower's) which shows some other aberrations as well, has a breadth of 140 mm. and a height of only 135 mm.; and a male skull (Davis, No. 804) that shows various synosteoses, and is clinacephalous, has a height (5 in.) a little less than the breadth ; in all the other cases the height exceeds the breadth, and not set down very considerably—in one case (Flower's, No. 680) by 14 mm. The greatest height (136 and 137 mm.) is that of two male skulls —one of Mr. Flower's and one of mine.

The index of ratio between the length and height is, therefore, greater than between the length and breadth. After excluding the two deformed skulls, it amounts to an average of :—

| | Men. | | Women. | |
|---|---|---|---|---|
| Mr. Davis | (3) | 73·6 | (7) | 76·2 |
| Mr. Flower | (5) | 75·0 | (1) | 71·1 |
| Mine | (1) | 74·1 | (1) | 72·9 |
| In the whole | (9) | 74·9 | (9) | 75·3 |

The average from the collection amounts to 74·9. We cannot therefore exactly speak of lypsicephaly, though the form comes very near to this type. If we reckon orthocephaly at 75, or even at 74·9, the Vẹddá skull on an average falls below this category.

The height of the ear, which has only been taken by me (vertical distance of the upper edge of the outer auricular passage from the parietal bone), is likewise considerable, particularly in the male skulls, amounting to 120 mm. In this case the index of the height of the ear amounts to 64·9, whilst in the female skull No. 1 it reaches to only 60·4, and even with the deformed one (No. 4) only to 63·0.

As regards the formation of the face, I find, except the already-given descriptions, little osteological support. Of single regions I mention the eye-cavities and the nose.

The orbital index was, in the one case which afforded me an opportunity of taking the measurements, 84·6, exactly the same figure which gives the average in the statements of Mr. Flower. The single cases certainly show very considerable differences, for, according to Mr. Flower, we have among eight skulls: two indices below 80, two between 80 and 85, and four over 85 up to 91·7. Separating the sexes, we have from four male skulls an average of 85·1, from two female 84·3, a difference scarcely worth mentioning. On the whole we may therefore assume that the orbital formation is mesokonch.

The nasal index, which I stated at 50, is, according to Mr. Flower, who compared seven cases, 52·2; it is therefore mesorrhine, bordering on platyrrhine.

There certainly seems to be a not inconsiderable difference in sex, since the two female skulls cited by Mr. Flower were platyrrhine (56·1 and 57·8); and, on the other hand, among the male skulls one, if not two, were leptorrhine (46·5 and [?] 46·7), and only two platyrrhine (54·0 and 54·3). The depressed form of the bone of the nose is plainly seen in Table 1, Fig 3, and in the profile drawing by Messrs. De Quatrefages and Hamy. The previously given descriptions of Sir E. Tennent, Bailey, and Hartshorne, which emphasise the flatness of the nose, are in unison with this; and the pictures I have given, taken from photographs, also show plainly the depressed form of the root of the nose and the breadth of the rings.

The face altogether seems to be low, flattened throughout. The front view of the skull given by the Messrs. de Quatrefages and Hamy in their pictures exhibits this in a splendid manner. I obtained an index (relation of the entire facial height to the breadth of the zygomatic bone) of 83·1.

From the measurements of Mr. Davis I calculate as an average of five skulls almost the same figure, viz., 83·8. According to this the type is therefore, on the whole, chamæprosopous; and, as far as I can now discover, with the women more than with the men. The skulls of Mr. Bernard Davis show :—

| No. | Men. mm. | Women. mm. |
|---|---|---|
| 313 | 88·2 | — |
| 801 | 87·5 | — |
| 802 | — | 82·9 |
| 803 | — | 80·8 |
| 804 | — | 80·0 |
| Average | 87·8 | 81·2 |

Notwithstanding the depression of the faces, they are not actually broad. It is because of the slight prominence of the zygomatic arches and bones which Mr. Bernard Davis has already mentioned in contrast to the African races. Only the London skull, of which Messrs. de Quatrefages and Hamy have given us a picture, appears comparatively broad, and chiefly, it would seem, owing to the strong development of the *processus zygomaticus* of the maxillary bone, and the consequently increased size of the lower zygomatic protuberance.

Mr. Flower calculates, besides the alreolar index, the means by this, the present relation of the " basilar alvesli " length (distance of the anterior edge of the alveolar process from the *foramen occipitale magnum*) to the " basinasel length " (distance of the root of the nose from the *foramen magnum*) : the latter, supposed, = 100. The average of six skulls gives a figure of 96·3. I obtain only 93·4 for the female skull from the Colombo Museum. Separating the sexes the computation of Mr. Flower is :—

| No. | For Men. mm. | For Women. mm. |
|---|---|---|
| 675 | 93·5 | — |
| 676 | — | 93·0 |
| 678 | 101·0 | — |
| 679 | — | 96·5 |
| 680 | 96·9 | — |
| 681 | 97·1 | — |
| Average | 97·1 | 94·7 |

According to this it might appear as if prognathy was greater among the men than among the women, but we must reserve a final opinion on this point, since the measurements of individual skulls show such considerable differences, especially with the males. At any rate, prognathy is very slight. Mr. Bernard Davis goes so far even as to call the Vẹddá skulls tolerably orthognathous.

With regard to the proportions of the rest of the body, I have a few more statements from Mr. Hartshorne about two Vẹddás, which I subjoin, after having changed them into metre measure :—

|  | Latty, about 18 years old. mm. | Bandiey, about 25 years old. mm. |
|---|---|---|
| Height of the body | 1,631·91 | 1,517·59 |
| Circumference of the head around middle of the brow | 514·33 | 514·33 |
| From top of forehead to end of chin | 168·25 | 177·80 |
| Across face | 133·34 | 171·42 |
| Shoulder to elbow | 279·39 | 323·81 |
| Elbow to wrist | 254·00 | 219·05 |

| | | Latty, about 18 years old. mm. | | Bandiey, about 35 years old. mm. |
|---|---|---|---|---|
| Wrist to point of middle finger | | 196·82 | ... | 174·59 |
| Size of upper arm around the biceps | right ... | 260 34 | ... | 241·28 |
| | left ... | 263·51 | ... | 241·28 |
| Size of forearm | right ... | 222·22 | ... | 222·22 |
| | left ... | 222·22 | ... | 222·22 |
| Chest, breadth | ... | 787·39 | ... | 749·27 |
| Length of upper thigh | ... | 425·41 | ... | 419·07 |
| From knee to ankle | ... | 412·73 | ... | 393·67 |
| Size of the calf | ... | 298·41 | ... | 292·07 |
| Sole of the foot | ... | 241·28 | ... | 222·22 |

It is very probable that errors have crept into some of these measurements, especially with regard to the upper arm (shoulder to elbow), which, with the smaller man, is stated to be 44 mm. longer, whilst the whole arm is almost 13 mm. shorter. The breadth of the face also given for Bandiey, the smaller man, is not only 38 mm. more than for the much larger Latty, but of an incredible size altogether. We must, therefore, be very cautious in using these figures. Tolerably constant is the relation of the sole of the foot to the height of the body : with Latty it is 6·7, with Bandiey 6·8, contained in the height of the body. This is quite a normal relation. Mr. Bennett says the hands of the Vẹddás are small, but their feet long and flat. This may be so : one would hardly think it, however, from the measures given. Of the remainder of the measurements I have not much to say, especially as with some of them, *e.g.*, the length of the upper arm, it is not said where the measure begins and where it ends. This much at least we may conclude from the statements, that the single parts may be assumed to be well proportioned. Of special interest is only the size of the arm, whilst there is a marked difference in general between the right and the left arm. We find here on both sides the same figures—indeed, with Latty the size of the left upper arm is a little more than 3 mm. larger than that of the right. This is to be accounted for by the greater exercise of the left arm, which is specially strained in drawing the very heavy bow, as has been described by various travellers. Mr. Bernard Davis has in his collection the upper thigh and upper arm of a Vẹddá: the former is 17·2 in. = 436·8 mm. in length, the latter 12 in. = 304·8 mm. This was evidently a very strong individual: the length of the upper thigh exceeds even that of the two men measured by Mr. Hartshorne (425 and 419 mm.). On the other hand, the length of the upper arm, according to Davis, does not coincide with the figures given by Hartshorne, and this is additional proof of the inexactness of his measurements.

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The comparison of the Vẹddás with their neighbours on the Island is not a little increased in difficulty from the lack of sufficient information with regard to the relative physical condition of the latter. Even the best describers limit themselves in the main to a few words. Regarding the more civilised tribes, as already well known, they at most therefore institute only comparisons with the continental tribes of Hindústán or with the European. Osteological material is also comparatively scanty in the European collections, and even what there is appears to me as rather unsafe. I have, through the kindness of Consul Freüdenberg, received three skulls of Siṇhalese and three of the Tamils; but examination proves one designated as the skull of a Siṇhalese child to coincide so exactly with the Tamils, that it seems very doubtful indeed if this is correctly stated. The inhabitants of the low lands upon the Island have so frequently trespassed on each other's territory, and become so intermingled in life, that their skulls may have been confounded after death. Hence I offer the following remarks with all reserve, and principally with the aim of provoking, if possible, more exact information and the sending of better material. In particular I must indicate, as the greatest desideratum, the need of satisfactory photographs,—especially half-lengths,—not too small (profile and front face), in the right horizontal position.

In our comparisons the genuine Siṇhalese and the Tamils come chiefly under consideration. Only collaterally can the descendants of the immigrant Arabs (Moors, Moormen), Malays, and still less Chinese, Burmese, Aryan Indians, African Negroes, and Europeans, be brought in. The two first-named tribes are so predominant, through the extent of territory they occupy, as well as from their numbers, that, apart from their almost exclusive historical claims, they must be specially considered.

### *The Siṇhalese.*

They occupy in the main the south and south-west of the country. According to Sir E. Tennent* the inhabitants of the south coast from Galle to Hambantoṭa are the purest Siṇhalese. This part formed an important division of the old province of Ruhuna, which was very early colonised by the descendants of Wijayo; they neither intermingled with the Malabars nor had any intercourse with them whatsoever. Unfortunately Sir E. Tennent gives no actual description of the people. He only speaks incidentally of their build, and their hair; what chiefly caught his attention was their inclination to an effeminate mode of arraying themselves. This is especially conspicuous in the way of wearing the hair, of which he gives a picture; but adds, this applies only to the people of the south-west coast, and not to those in the interior or in the north or east. They let the hair grow long, comb it *à l'impératrice*, high from front to back, and bringing it up from the nape of the neck form a roll (*koṇḍé*) on the protruding part of the back head, fastening the whole with combs. Even Ptolemy has mentioned the long hair in Taprobane, and Agathemerus asserts that the men of Ceylon let their hair grow as long as it will, and roll it into a coil on the top of the head in the fashion of women.

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* Tennent, *l. c.*, vol. II., pp. 106–112.

Of the children Sir E. Tennent says they are beautiful, with wavy shining hair. He says a group of children in their nakedness look like living bronzes. The men also have delicate features and slender limbs, are frequently beardless,[*] and wear around the hips a piece of cloth (*comboy*) like an under petticoat, so that altogether the impression they make is womanish. Finally, he adds a notice of them from a Chinese book of travel by Hiouen Thsang, in which the Mongolian expresses his amazement at their prominent noses, by saying the Siŋhalese have a bird's beak on a human body.

This is about all that I find in Sir E. Tennent concerning the Siŋhalese. The few paragraphs devoted to the inhabitants of Ceylon by Mr. Von Schlagintweit[†] coincide with this. Somewhat more definite, though very superficial, are the reports of earlier authors. Valentyn[‡] says: "De Cingaleezen zijn niet heel swart, maar bruyngeel, lang en open van ooren, niet klock von gestalt, door de bank wat mager, zeer zwak van leden, geschwind van licham en vrijser ruf tig van geest." Wolf[§] declares outright "the Siŋhalese have a black skin." Percival[‖] ascribes to the Ceylonese a stature of middle height, about 5 ft. 7 in., and says the colour of the women approaches to yellow. Selkirk[¶] calls the eyes of the Siŋhalese bright black, and says the hair is long, black, and fastened into a knot. The insides of the hands and feet are white, the rest of the body black. The people in the interior seldom shave the beard, but those on the coast do. Sirr[**] says the men are under middle height, something like 5 ft. 6 in. on an average, and well proportioned. Their colour varies from clear, yellow-brown to black; hair and eyes the colour of ebony. The Kandyans are darker, more powerful, and of better growth. Philalethes,* who specially refers to Valentyn, says the colour of the Siŋhalese is not quite black, but of a deep chestnut, suffused with a yellow tint. Their ears are long and open, their bodies not powerful, but slender and agile.

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[*] These statements are said to be found in the history of Tambulus. Diodor, Lib. 2, cap. 36.

[†] Herman von Schlagintweit, Sakunlunski. Reisen in Indien and Hoch Asien. Jena, 1869. Bd., *l. s.*, 213.

[‡] Valentyn, *l. c.*, Bl. 43.

[§] Wolf, *l. s.*, 155.

[‖] Percival, *l. s.*, 222.

[¶] Selkirk, Recollections. London, 1884, pp. 58-59 of Ceylon.

[**] Sirr, *l. c.*, vol. II., p. 38.

Much more exact is the description which Mr. Davy† gives. He divides the Siŋhalese race into three great tribes: the genuine Siŋhalese, the Kandyans, and the Veddás. In describing chiefly the inhabitants of the interior of the Island, "the highlanders," he says that they are in build, speech, manners, customs, religion, and government complete Indians. Like them they are distinguished from Europeans less in the features than in some trifling characteristics of colour, size, and form. The complexion ranges from light brown to black. Also the colour of the hair and the eyes varies, although not so often as that of the skin; black hair and eyes are most common, and brown hair and eyes less uncommon than gray eyes and red hair, and the light-blue or red eyes and flaxen hair of the Albinos. In size, the inland people exceed the low-land Siŋhalese and the most of the natives born on the coast of Coromandel and Malabar, but they do not attain the height of the European. Their average is somewhere about 5 ft. 4 to 5 in. They are clean-made, with neat muscle and small bone. For Indians they are stout, and have, as a rule, well-developed chests and broad shoulders, especially in the mountain districts, where they, like other highlanders, have rather short but strong and very muscular thighs and legs. Hands and feet are in general very small,—indeed disproportionately so compared with ours. The form of the head is good, but perhaps rather longer than among Europeans. Their features are commonly neat and often handsome, their countenances intelligent and animated. Nature has given them a wealth of hair, which, in general, they allow to grow to considerable length on their faces, as well as heads, since in their opinion a beard, so far from disfiguring, adorns the face. The women as a rule are well formed and good looking, often handsome. According to their opinion a beautiful woman should have the following attributes:—Hair luxuriant, like the tail of a peacock, long, reaching to the knees, and terminating in graceful curls; eyebrows like the rainbow, and eyes sapphire blue, or like the petals of the blue *mánil* blossom; nose like a hawk's beak, and lips bright and red as coral or the young leaves of the *ná* tree; teeth small, regular, and closely set as the buds of the jasmine; neck full and round; chest capacious, and breasts firm and conical, like the yellow cocoanut; waist almost small enough to be spanned by the hand; hips wide; limbs tapering; the soles of her feet without hollows, and the surface of her body soft, delicate, smooth, and rounded, without protruding bones and sinews.

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* Philalethes, *l. c.*, p. 231.

† Davy, *l. c.*, p. 109.

Davy has the great merit of having added to his work a series of pictures, which illustrate more clearly many of these particulars. On Plate 6 is found a coloured group of Kandyans, after a drawing by Lieut. W. Lyttleton, which shows very clearly the dark-brown complexion of the common people by the side of the lighter yellowish-brown tint of the Disávé: the faces are comparatively long and narrow, the noses arched and very prominent, the upper lips short, and the muscles about the mouth delicate. On Plate 4 likenesses are given, which were drawn from ivory figures carved by native artists; here the faces are shorter and somewhat broader; the noses very prominent and arched, having an almost Jewish expression; the lips (especially of the women) full and bulging, but without any approach to prognathism.

Cordiner* describes the Siṇhalese as of a slender make, rather below the medium height, with slight but well-shaped limbs, and with regular features of the like form with the Europeans; their colour, although varying in shade, not so dark as that of the Indians on the continent; the eyes black, but the whites of them strikingly clear; the hair long, smooth, and black. Among the higher classes the complexion is so light that it seems lighter than that of brunettes in England. In all classes the inner surface of the hands and feet is uniformly white. Of the Kandyans Cordiner* says that they differ no more from the Siŋhalese than the mountaineers of other lands from the dwellers on the coast. They are of a stouter make and fairer complexion, but not taller. Their manners are less polished, and the custom of wearing a beard increases the natural wildness of their appearance.

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* Cordiner, *l. c.*, vol. I., p. 94.

If we compare these descriptions with those already given of the Vęddás we find in reality but few points of difference. The complexion of the last may be on the average somewhat darker, but it varies apparently within the same limits. In regard to this the testimony of Dr. Davy especially is of the highest importance. The swarthiness which Mr. Bailey emphasises of the Vęddás is to be ascribed at least in part to their lack of cleanliness. It is equally doubtful if the hair differs; put the well-dressed, carefully-combed, smooth hair of the Siŋhalese, which is only curly at the ends, beside the neglected, dishevelled, entangled, but not curly hair of the Vęddás, which hangs down so far and sticks out all round, making the head appear very large, and one is inclined to conjecture that the difference here is owing to culture rather than to original peculiarity. The average height of the Siŋhalese seems to correspond to about the height of the tallest Vęddá: they are somewhat shorter than Europeans.

Among the characteristics cited there is in reality only one which seems to have made a very decided impression on every observer, namely, the form of the nose, about which even the old Chinese furnish reports. Whilst with the Siŋhalese it is very prominent, resembling an eagle's beak, and therefore rather thin and narrow, with the Vẹddás it is always described as flat, and with widely-distended nostrils. Add to this the thick and projecting lips and the large mouth, and perhaps also the comparative shortness of the Vẹddá face, there then remains, as Mr. Hartshorne* has already pointed out, only a few facial characteristics for diagnosis. Whether this is correct the future may teach us, provided exact descriptions (and above all large photographs) of the Vẹddás are furnished in time. Meanwhile we may state that the *Siṇhalese also belong to a dark—perhaps best described as a brown—smooth-haired, and not (or only a very moderately) prognathous race.*

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* Cordiner, *l. c.*, p. 131.

How is it now with the osteological indications? Literature in this regard offers somewhat more explicit statements, although exclusively for skulls. Here also it is the merit of Davy to have furnished us with exact information. He asserts the Siṇhalese skull to be longer than the European. As proof of this he gives on Plate 3 the drawing, side and front view, of the skull of a Siṇhalese chief from a secluded region inland. This skull is long, moderately high, with abruptly rising forehead, and broad, square back head, flattened at the sides up to the temples; the zygomatic arches prominent, the eye-cavities rather broad and low, and tending to square, but widening towards the bottom and the outside; the nose narrow and prominent, with bridge slightly bent in; the face short, with a low, slightly projecting upper jaw.

A more recent description of a *cranium Cingalensis* is given by Gerard Sandifort.† The skull was furnished by Van Hassem an Brugmans, and is at present in the Anatomical

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* Hartshorne, *l. c.*, p. 409, says: "The general appearance of the Weddas may be described as distinctly non-Aryan. The comparative shortness of their thumbs and their sharply-pointed elbows are worthy of remark, as well as their flat noses, and in some cases thick lips, features which at once distinguish them in a marked degree from the Oriental races living in their vicinity."

† Gerard Sandifort. Tabulæ Craniorum Diversarum Gentium. Lugduni Batav. 1838 (*c. f.* Mus. Anat. Acad. Lugd. Bat., 1827, vol. III., p. 39, No. DLXXXIV.).

Museum at Leyden. There is also a great number of measurements given, but unfortunately the greater part of them are of no use for our purpose. The capacity is stated at 39 ounces of millet. Judging from the picture it is a very powerful skull, with a long, strong face, very prognathous, having large, very prominent teeth, large and broad lower jaw, the nose long, high, and thin, the eye-cavities low, imperfectly rounded, and very much aslant. As their height is given at ·031, the breadth at ·041, the orbital index 75·6 would be chamaekonch. The inter-orbital distance is mentioned as ·024. The author himself describes the cranium as oval, with a very high crown, sides very much flattened, with slightly projecting *tubera*, the back head oblong and by no means spheroid, the under parts rather flat; the eye-cavities oblong in the tranverse axis, the *fissura orbitalis posterior* wide, the ends (*vertices*) of the upper jaw hollowed out (*excavatus*), on the lower rims cut out (*exsectus*), and passing obliquely into the likewise oblique and projecting alveolar process of the maxillary bone; the palate much arched (*fornicatum*) and oblong. I remark that its length is stated at ·059, its breadth in the region of the third molar at ·041, in the regim of the præ-molars at ·039; out of the first two measures would result a palatal index of 69·4: consequently an extremely leptostaphyline measure, which indeed does not afford an exact comparison with my measure taken in the region of the second molar. The vertical height of the skull is stated at ·145, the tuberal parietal breadth at ·126, the jugal breadth at ·138, and the distance of the maxillary angle at ·110.

I find another statement in the catalogue of the Vrolik Museum in Amsterdam,* where, under No. 66, is mentioned the skull of a native of Ceylon, which Professor Bernard had furnished. It is compared with the *cranium Cingalensis* of Sandifort, from which it is said to be distinguished chiefly by its less prognathous jaw. It is described as a fine, strong, dolichocephalous and somewhat prognathous skull, the forehead long, but of little height, considerably flattened at the sides, the cheek-bones strong, and all the muscle *epiphyses* well developed. From the measures given we calculated an index of ratio between length and breadth of 72·2, between length and height of 75, and a palatal index of 73·7.

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* Musée Vrolik. Catalogue par J. L. Dusseau. Amsterdam, 1865, p. 22.

Mr. Welcker [*] gives in his craniological tables the average index figures for five Siṇhalese skulls, without, however, saying where these are at present to be found; probably the above-mentioned Dutch specimens are among them. He states the breadth to be 73·4, the height 77·2.

A large number of Siṇhalese skulls are brought forward by Mr. Davis,[†] in fact, a whole dozen. One of these, however, is expressly said to be probably a hybrid of Malabar and Siṇhalese, and must therefore be excluded. Of the remainder one is from Panaduré, one from Kandy, one from Negombo, one from Colombo, the others unascertained. Half are male and half female. The one (No. 982) which is called klinocephalous and has a *processus papillaris* before the opening of the back head, according to Mr. Davis shows "a degree of mikrocephaly," but as its capacity amounts to 1,474·6 cub. cm. we are not quite justified in such an assumption. I give below a short list of the main results obtained:—

| The number of the skull. | Capacity. | | Index of Longitudinal Breadth. | | Index of Longitudinal Height. | |
|---|---|---|---|---|---|---|
| | ♂ | ♀ | ♂ | ♀ | ♂ | ♀ |
| 315 ... | — | 1175·7 | — | 72 | — | 70 |
| 979 ... | — | 1394·9 | — | 74 | — | 78 |
| 980 ... | 1235·5 | — | 76 | — | 84 | — |
| 981 ... | — | 1355·1 | — | 75 | — | 74 |
| 982 ... | — | 1474·6 | — | 65 | — | 72 |
| 983 ... | — | 1494·6 | — | 70 | — | 80 |
| 984 ... | 1673 9 | — | 75 | — | 76 | — |
| 1007 ... | 1614·1 | — | 72 | — | 70 | — |
| 1008 ... | 1693·8 | — | 73 | — | 74 | — |
| 1009 ... | 1275·4 | — | 72 | — | 76 | — |
| Medium ... | 1498 5 | 1378·9 | 73·6 | 71·6 | 76 | 74·8 |
| Total average 10)... | 1438·8 | | 72·4 | | 75·4 | |

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[*] Archiv. für Anthropologie, 1886, Bd. s. 154, 157.

[†] J. Barnard Davis. Thesaurus Craniorum, p. 132.

The average indices agree very nearly with the indices of the skulls in the Vrolik Museum. Dolichocephaly is very pronounced, though not so strongly as with the Vẹddás; the height agrees pretty well with the Vẹddás, but the capacity is much greater.

A wholly different description of the skull of a Siṇhalese is given by Mr. Zuckerkandl.* This skull was brought over by the Novara expedition without any statement whatever of its origin. It has a capacity of 1,505 cub. cm., and an index of ratio between length and breadth of 86·1. It is therefore hyper-brachycephalous. We may assert without hesitation that it is either in a high degree pathological or outright not the skull of a Siṇhalese. The latter assumption is supported by the fact that the incisors and canine teeth of the upper jaw are filed flat,—a phenomenon nowhere mentioned as seen among the Siṇhalese, but which points very clearly to a Malayan origin. The assumption of a pathological, perhaps deformed formation, is supported by the fact that the cranium is asymmetrical, the forehead flat and retreating, while the *squama occipitalis* is pressed flat to such a degree that the upper half is sunk in "almost in the form of a wave." We may therefore exclude this skull from comparison.

With regard to my own skulls, I have already said that probably a child's skull, marked as Siṇhalese, will have to be excluded; but as it is so distinctly stated to be Siṇhalese I will here describe it with the rest.

### *Skull No. 1 (Table II.).*

A juvenile male skull, seemingly rather large, but without under jaw. *Synchondrosis spheno occipitalis* closed. Wisdom teeth broken out; the front teeth have later fallen out; the remaining molars and the first premolars are very large, and only a little worn on the crowns, but covered with a thick black crust (betel). The points of attachment of the muscles strong, but the frontal eminences not very prominent. The bones are yellow-brown, smooth, shiny, and hard.

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* Reise der Osterreichischen Fregatte Novara. Anthropologischer Theil. Erste Abtheilung. Cranien der Novara Sammlung, beschrieben von E. Zuckerkandl. Wien, 1875, s. 24.

The skull is in reality smaller than it appears; it has only a capacity of 1,110 cub. cm. The index of ratio between length and breadth is 71·3, and is strongly dolichocephalous, between length and height 72·5, orthocephalus.

In the *norma verticalis* the roof of the skull appears long and narrow, tapering toward back and front, moderately phænozygomatic, the *tubera parietalia* spreading out broadly. The skull is unsymmetrical (plagiocephalic), especially behind and below, where upon the left side, but still on the parietal bone, there is to be observed an oblique flattening, whilst the right side is more fully rounded out. In front the form is more regular, although the right half of the forehead is somewhat awry, and the right zygomatic arch shorter than the left; the nose diverges a little to the left, and the palatal suture at the back part turns a little to the left. The sagittal suture, also, is not exactly median. Many signs are visible of premature *synosteosis:* thus, on either side, but more extensively on the left, in the midst of the side parts of the coronal suture, and at different points of the sagittal suture, of which the right emissary is wanting and the left very small. The lower side parts of the coronal suture are quite obliterated on the left for a length of 30 mm., and on to the right of 22 mm. The open sutures are comparatively simple, yet the sagittal suture in its middle, and the lambdoidal suture, have pretty large and broad indentures. The latter at the point is very much depressed, and at the sides, especially the left, there are several wormian bones. On either side, in the region where usually the *sutura transversa occipitis* begins, we find a wormian bone reaching to the parietal bone, larger on the left side, but in its middle and upper part synosteotic.

In a lateral view of the skull it appears long and low, the brow itself low and rather sloping, the *tubera frontalia* only tolerably distinct, the front of the skull long and rising abruptly. It reaches its height at the coronary suture ; behind this is a slight depression ; the vertical height, a finger's breadth behind the *coronaria.* The back slope of the parietal curve begins in the region of the *tubera*, and is very long ; the *squama superioris* is strongly convex. The temporal *fossæ* large, and reaching to the *tubera parietalia*, and beyond the lambdoidal suture. The front part of the temporal *fossæ* uneven and rugged. The *squama temporalis* on either side flat and high, especially on the left. On either side a strong *processus frontalis*, which is only somewhat indistinct because of the extensive *synosteosis* of the *coronaria.* The *ala temporalis* low and quite overlaid by the very broad process, which extends from the *squama temporalis*, pretty regularly on the right, somewhat jagged on the left, but on both sides pointed in front. In consequence of this stenokrotaphy we find, however, that the very much depressed place is pretty low down upon the *ala*, indeed, immediately at the juncture of the *sutura spheno frontalis*, *zygomatico frontalis*, and *spheno zygomatica.* The process appears more pointed on the left, on the right almost trapezoidial. The measures amount to :—

| | Right. | Left. |
|---|---|---|
| Length of *proc. temp.* upper ... | 15 mm. ... | 12 mm. |
| Do. under ... | 10 mm. ... | 9 mm. |
| Breadth of *ala temp.* ... ... | 19 mm. ... | 18 mm. |

In the *norma occipitalis* the contour of the skull is almost pentagonal, the side parts going almost straight down, only diverging at the base, the roof with slightly arched lateral parts, the base tolerably straight. The *squama superioris* strongly prominent and flattened at the sides. No *protuberantia occipita externa.* The *linea semicircularis superior* and *inferior* strongly marked : *linea suprema* very faint. We find on either side, however, and especially strong on the left, a deep abrupt break between the *facies muscularis* and the *facies laevis*, which in its lower part follows the direction of the *linea superior*, then makes a deep bend toward the mesial line, and ends parallel to the *linea suprema*, right underneath it. In this way is formed on either side a long deep-lying tongue of the *facies laevis*, which reaches the *sutura transversa.* The cerebellar *fossæ* are tolerably rounded out, the *facies muscularis* more deeply marked. No large *emissaria mastoidea*, but instead of this a larger *foramen* on either side, near the *crista perpendicularis.* The *foramen magnum* is rounded posteriorly, more oval anteriorly, 31 mm. in length, 26 in breadth, therefore 83·8. The articulation prominent and bent; *processus mastoides* poorly developed, with a deep depression; *processus styloides* large. *Apophysis basilaris* lying somewhat flat; *processus pterygoides* with spreading *lamina externa;* deep *fossæ* for the lower jaw.

In the *norma frontalis* the middle and anterior part of the head seems high, the region of the fontanelle raised, the face, however, short and narrow. Orbits low and almost four-cornered; index 76·9, therefore strongly chamaekonch. *Fissura spheno maxillaris* spreading out in front. The outer edge of the orbits bent inwards a little just below the *sutura zygomatico frontalis*, inasmuch as here the *processus frontalis* of the malar bone is somewhat bent inward posteriorly. The nose low, narrow above where it articulates with the broad nasal process of the frontal bone, the bridge bent in and somewhat rounded, but prominent and aquiline, the aperture broad below, narrow above, hence triangular; index 57·7, therefore platyrrhine; *canine fossæ* full, *foramina infraorbitalia* large, and especially the left one, communicating with a roundish depression on the surface of the *canine fossa.* Alveolar process short, in the middle 13 mm. long, obliquely prominent. *Alveolæ* broad, palate large, especially long; index 75·4, therefore leptostaphyline. The *sutura transversa palati* very much forward, 17 mm. in front of the *spina nasalis posterior*, which is short and rounded away. The alveolar process is widely curved in front, almost straight at the sides, slightly converging behind. Hence the palate long, of prognathous character, and somewhat pithecoid in form. The malar bones on both sides have a fissure posteriorly beginning at the *sutura* *zygomatico temporalis*, 6 mm. right, 5 mm. at the left, and 3 *foramina zygomatica.* The *tuberositas molaris* is of moderate size, and belongs mainly to the upper jaw; the *tuberositas marginalis temporalis*, especially the left, is very strongly developed, and the bone very much bent inward below.

### *Skull No. 2.*

A senile, wholly toothless, probably male skull, without lower jaw, of very moderate capacity (1,200 cub. cm.), but strongly dolicho-orthocephalic (ratio of length and breadth 70·2, of length and height 73·2).

It shows throughout a tendency to *synosteosis;* the sagittal suture is wholly obliterated—not a trace of it; in the region of the fontanelle a broad projection above the frontal bone, as sign of early obliteration. The *emissaria* are present, but very near together (distance 10 mm.), the right considerably enlarged. The coronal suture obliterated in the lower part to a considerable extent on the right; on the left it is perfectly simple, and in process of obliteration. At the right the posterior part of the *spheno frontalis* is overgrown; the *spheno parietalis* on both sides indistinct. The lambdoidal suture at its angle shows traces of obliteration.

In the *norma verticalis* the skull is very long and narrow, strongly arched in front, narrowed behind, with very prominent lambdoidal angle, for the rest phænozygomatic. The tuberosities very broad and prominent, therefore somewhat klinocephalic in form. At the right, on the parietal bone, just behind the coronal suture, several flat *exostoses.*

In the *norma temporalis* the skull appears rather long than high. The middle of the parietal curve is flat, its frontal division strongly arched, the posterior obliquely sloping downward to the lambdoidal angle; then, however, much arched at the *squama superioris.* Eminences rising even to the parietal prominences and the lambdoidal suture. *Squama temporalis* flat. *Alæ* depressed towards the centre, especially the right one, which is very much narrowed below. At their extremities posteriorly an irregular, trapezoidal *epiptericum*, 11 long, 8 high, with indented edges, which towards the front are somewhat indistinct. The *angulus parietalis* is very short, and as far as can be judged with the *synosteosis* of the lower part of the coronal suture, and the adjoining part of the *spheno frontalis*, is prevented from coming in contact with the *ala* up to a distance of 4 mm.

| | Right. | Left. |
|---|---|---|
| Direct breadth of the *ala sphen.* above ... | 21 mm. ... | 24 mm. |
| Do. do. below ... | 12 mm. ... | 15 mm. |

The *norma occipitalis* shows very high straight sides, with simple flattened arching of the roof, and a straight base. Lambdoidal sutures jagged. *Squama superioris* strongly arched, but short, somewhat flattened laterally and below. Plainly marked *linea semicircularis suprema.* At the upper end of the *crista perpendicularis* a large irregular protuberance, very deep depression below the *lineæ semicirculares superiores.* Large cerebellar archings with depressions between well-developed *emissaria mastoidea.*

*Basis cranii* long, and protruding behind. Mastoid process small, with deep fissures. The *foramen magnum* small, 31 mm. long, 28 mm. broad, index 90·3, very prominent articulating surfaces, very long and strong styloid processes. In the centre of the basilar *apophysis* a large basilar *foramen* entering obliquely posteriorly, which corresponds to a deep irregularly sinuous *sulcus* on the surface of the *clivus Blumenbachii*, which, above and at the left, seems to have communicated with the *sinus cavernosus.* Deep and wide articular surfaces for the under jaw, very large *laminæ externæ* on the alar processes, especially on the left. At the left a very large *foramen ovale.*

From the front the middle of the head appears high and broad, the face delicate, short, and broad. The orbits rather high and oval, widening somewhat as well to the inner and upper, as to the outer and lower aspect, yet almost four-cornered ; index 82·9, therefore mesokonch. Remarkably wide *fissura spheno maxillaris.* The nose narrow above as well as below, the bridge very prominent, bent in at the middle, almost aquiline; index 46, therefore leptorrhine. The *sutura naso frontalis* fits convexly above into the nasal process of the frontal bone. *Spina anterior* and *inferior* well developed and prominent; *crista* and *septum* very thick. On the cheekbone either side a short indication of a posterior fissure, which, however, lies very high; on both sides three small *foramina zygomatica.* Canine *fossæ* are little depressed, but, on the other hand, run from the immensely broad *foramen infraorbitale* on either side to the alveolar process, which is more strongly developed on the left, making a very deep fissure. The alveolar process is entirely toothless, but there are still single open *alveoli*, especially at the left in the region of the bicuspids and first molars; most of the *alveoli*, especially those of the incisors, are entirely obliterated, and the process has disappeared, so that the shape of the very much shrunken palate is uncertain. Here also the position of the transverse suture is remarkable, because it is pushed so far to the front as to be at a distance of 14 mm. from the posterior edge. The *spina nasalis posterior* is wholly wanting; a short bifid projection larger on the left than on the right.

### *Skull No. 3.*

A child's skull, perhaps female, with the not yet exchanged milk teeth. The outer upper cutting teeth are still enclosed in their cavities. The *sutura incisora* of the palate very plain. The bicuspids and first molars developed, and very large. The first bicuspids with three fangs, two outer and one inner, the right one, moreover, with an *exosteosis* of enamel. The *alveoli* of the second molars are open very wide, and empty, but the teeth, to be sure, had not yet erupted. The openings of the *alveoli* of the wisdom teeth still lie very deeply, and far back. The *synchondrosis spheno occipitalis* very widely open. To the right, at the *squama occipitalis*, is a *sutura mendosa* 24 mm. long, in the direction of the *sutura transversa;* at the right only a slight indication of one.

Notwithstanding youth, this skull is larger than the two preceding ones; its capacity amounts to 1,250 cub. cm., therefore it is mesohypsicephalic (ratio of length and breadth 76·7, of length and height 77·3): therefore in its form it is wholly irregular.

Looked at from above it appears cut off short behind and somewhat unsymmetrical; broadly arched in the region of the parietal eminences, towards the front lessened, but still more broad. It is scarcely phænozygomatic. The sutures are open, but the lower parts of the coronal and the posterior division of the sagittal are very simple. The left *foramen parietale* is obliterated up to an almost invisible point, the right distinct, but moved very near to the suture. The lambdoidal has deep indentations with wormian bones near the angle, and in the vicinity of the side fontanelle. Parietal and frontal emissaries broadly prominent.

At a side view the skull has a wholly female form; the low brow passes with a sudden turning into the long slight parietal curve, from which, posteriorly, there is a very sudden fall, with slight arching of the *squama superioris*. Yet the skull appears high. In the right temporal region is a very large *epiptericum*, 25 mm. long, 10 mm. high, obliquely quadrangular. This completely interrupts the union of the *ala* with the *angulus parietalis*, at the expense of which it is principally developed. The ring is depressed, and in its middle part shows stenokrotaphy. To compensate, the temporal part of the frontal bone is arched forward, bombshaped on the left. The conditions are almost normal; but here also is an arching of the orbital portion of the frontal bone, and the *ala* is set more deeply into the latter :—

| | | Right. | | Left. |
|---|---|---|---|---|
| Breadth of the *ala* above | ... | 13 mm. | ... | 20 mm. |
| Do. | in the middle | 10 mm | ... | 12 mm. |

At a back view the skull is very high and broad, the sides straight, slightly converging below, the roof slightly rounded. The back part of the head high, the *squama superioris* arched out, almost like a ball. No protuberance, *linæ semicirculares* scarcely visible. Cerebellar archings well developed over the *sutura mendosa*, a deep transverse impression (einschnürung ?) which in a manner cuts off the ball-shaped *squama superioris*, and is deepest at the lambdoidal suture.

A view of the skull from below gives the impression of breadth, principally in the mastoid region, whilst the laterally narrowed and very small occipital part seems rather long. The mastoid processes small, with a deep fissure. *Foramen magnum* very large, especially long and posteriorly—in the middle of the border having a secondary curving out (indication of *spina bifida occipitalis ?*); on either side in front of this a thickened place forming a smooth articulating surface, evidently for the reception of the ring of the *atlas*. Length of the *foramen* (with the curving out) 36, breadth 25.

From a front view is seen a low, broad forehead, with very distinct eminencies and large nasal process. At the lower part of the latter a short remnant of the frontal suture. The orbits high and large diagonally, widened above and outwardly; index 83·3, therefore mesokonch. The root of the nose broad and somewhat flattened, the bridge slightly arched and short, bent forward and downward at the end; the *sutura naso frontalis* flat, and only slightly projecting above the plane of the *sutura maxillo frontalis*. The aperture high and triangular, with rounded corners; nose index 55·5, therefore platyrrhine. Alveolar process not at all prognathous, but the teeth somewhat obliquely directed forward. Palate short and broad, almost the shape of a horse-shoe, with a large (17 mm. long, from front to back) palatal plate; index 86·8, therefore brachystaphyline. The curve of the teeth short and wide, diverging behind.

From this description it is manifest that the last of the three skulls differs in the chief respects from the two others, and it is easy to understand that this difference would have become very much greater if the child had lived and completed its development. It will appear later that in these main points it approaches the skulls of the Tamils, although these, among themselves, present no small differences. I will not go quite so far as to declare outright that it is a Tamil skull, but it may have belonged to a bastard, and the fact (already mentioned) that the skull No. 316, from Mr. Davis's collection, which is distinctly marked as that of a hybrid of Malabar and Siṇhalese, corresponds with this one almost entirely in the indices (ratio of length and breadth 77, of length and height 78), speaks strongly in favour of the assumption. It would seem at least wiser for the present to exclude it from the collection. But I may at the same time add that the same reasons may be urged against the admission of the skull No. 980, from Mr. Davis. This has a ratio of length and breadth 76, and an index of height 84, although it belonged to a senile individual, with total disappearance of the alveolar processes. If then we withdraw this, as well as my skull No. 3, there remains tolerably homogeneous material, which offers great probability that it fairly corresponds to the typical conditions. To the support of this view the fact is of value, that the drawings which Davy, and even those which Sandifort has given, coincide not only with those I have furnished (Table II.), but also, in the main, with all the other descriptions and measurements. Nevertheless I am sorry to say that the existing material is nowise sufficient to enable us to decide all the questions. The absence of the lower jaw in all my skulls is a very serious loss, and the senile condition, as well as the extensive *synosteosis* of one of the two apparently pure skulls (No. 2), makes even the use of this, in regard to all the points in which it varies, questionable. Even the third still remaining skull (No. 1) is not free from great and plainly individual aberrations, for it not only shows, in spite of the youth of its owner, very numerous obliterations, but also on either side a large *processus frontalis squamæ temporalis.*

This discussion is in the highest degree instructive, as showing how unsafe it is to make race definitions on the ground of single, or of a few skulls, and how necessary it is, especially for such complicated ethnological conditions as those of Ceylon, to have ample and historically sure material at our disposal. In the present case, I consider myself justified in not foregoing the use of the skulls sent to me, because through the comparison with the skull measurements from other collections I have sufficient material under control afforded me. Setting aside the not measured but simply represented skulls in Davy's work, and also those of Mr. Welcker (five) mentioned without any detailed statements, and Sandifort's skulls given with a wholly different method of measurement, we can use for our comparison twelve Siŋhalese skulls, viz., one from the Vrolik Museum, nine from Mr. Davis's collection, and two from mine. These would make a good broad basis for the decision, if important numbers were not lacking in Mr. Davis's: for instance, measures of the orbits, of the nose, and of the palate. Hence my work in several respects can only serve as preparatory.

Our study of details thus far has proved, first, that the Siŋhalese skull is considerably larger on the average than the Vẹddá skull. Leaving out the two doubtful ones from nine skulls of Mr. Davis's, and two of mine, we obtain an average of 1,406 cub. cm., which exceeds the measure of the Vẹddá average by 145 cub. cm. To be sure, the fluctuations here also are very great: the extremes of 1,110 and 1,694 cub. cm. afford a difference of 584, almost as great as we meet with among the Vẹddás. A comparison of them, however, immediately shows that the numbers much more frequently range high among the Siŋhalese :—

| cub. cm. | Vẹddás. | | Siŋhalese. | |
|---|---|---|---|---|
| 901–1,000 | 1 | 15 | — | 4 |
| 1,001–1,100 | 1 | | — | |
| 1,101–1,200 | 3 | | 3 | |
| 1,201–1,300 | 10 | | 1 | |
| 1,301–1,400 | 2 | 5 | 2 | 7 |
| 1,401–1,500 | 2 | | 2 | |
| Over 1,600 | 3 | | 3 | |

Corresponding to the greater capacity, the measurements are also larger with the Siŋhalese.

And first, for the extent horizontally I have, in like manner, as with the Vẹddás, after putting the figures of Mr. Davis into metre measure (leaving out here also the skull No. 980), received as an average of—

| | |
|---|---|
| 4 Male skulls | 532 mm. |
| 5 Female skulls | 494 mm. |
| 9 Siŋhalese skulls | 511 mm. |

Compared with the Vẹddá skulls of Mr. Davis, the difference in favour of the Siŋhalese amounts to 26·11 and 23 mm. My two Siŋhalese skulls, whose small capacity is clear from the previously given numbers, show only 482 and 493 mm. extent horizontally: consequently, in the one case it is somewhat less and in the other somewhat more than the average of the Colombo skulls which I measured. On the other hand, the size vertically (398 and 293 mm.) proved greater with my Siŋhalese than the average of the Colombo skulls (298 mm.). One of the latter, however (No. 5), has a higher measure (300 mm.). In the average, the vertical compass of my two Siŋhalese skulls is 192 mm. less than the horizontal, of which it is 60·5 per cent.; therefore somewhat more than with the Vẹddás.

I have likewise calculated the length of circumference of Mr. Davis's skulls, taken with the sagittal suture. I receive an average from—

| | |
|---|---|
| 4 Male skulls | 393 mm. |
| 5 Female skulls | 370 mm. |
| 9 Siŋhalese skulls | 380 mm. |

whilst my own measurements amount to 354 and 365 mm. The corresponding average with the Vẹddá skulls amounts to 366 (Davis) and 355 (Virchow) mm.

As regards the single segments of the sagittal arch, I find the following average from Mr. Davis's figures :—

| | Frontal. | Parietal Segment. | Occipital. |
|---|---|---|---|
| 4 Male skulls | 136 mm. | 136 mm. | 120 mm. |
| 5 Female skulls | 128 mm. | 131 mm. | 110 mm. |
| 9 Siŋhalese skulls | 132 mm. | 133 mm. | 115 mm. |

or, according to the per centage of the whole sagittal arch :—

| | | | |
|---|---|---|---|
| 4 Male skulls ... | 34·6 ... | 34·6 ... | 30·5 |
| 5 Female skulls... | 34·5 ... | 35·2 ... | 29·7 |
| 9 Siṇhalese skulls | 34·7 ... | 35·0 ... | 30·2 |

Here, as contrasted with the Vęddás, we notice in a very striking way the important part taken by the frontal and parietal bones, especially the first, and the insignificant part, on the contrary, assigned to the occipital bone.

With my two skulls the proportions for the middle of head appear most favourable, and therefore rather according to the female type of Mr. Davis's skulls :—

| | | | |
|---|---|---|---|
| No. 1 ... | 33·6 ... | 35·3 ... | 31·0 |
| No. 2 ... | 33·9 ... | 35·6 ... | 30·4 |

The proportion of the sagittal vertical extent to the horizontal amounts in Mr. Davis's skulls to 74·3, in mine to 73·7 : hence almost the same numbers as with the Vęddás.

As regards the form of the head, I have already given the particulars of Mr. Davis's skulls. The ratio of the average of length and breadth is, according to index, the following :—

| | Skulls. | |
|---|---|---|
| Dusseau ... ... | 1 ... | 72·2 |
| Davis ... ... | 9 ... | 72 0 |
| Virchow ... ... | 2 ... | 70·7 |
| On the whole, from ... | 12 ... | 71·8 |

This excellent dolichocephalous measure accords almost exactly with the Vęddá average (71·6). Even if we take into consideration the five skulls measured by Mr. Welcker, and omit the one mentioned by Mr. Dusseau, the average for sixteen skulls only amounts to 72·2. I will not lay any particular stress upon the difference in sex, since even with the Vęddás contradictory numbers have been shown. I can only say authoritatively that Mr. Davis's figures for the female Siṇhalese heads show a smaller proportion (71·2) than those of the men (73). But here I must say that the previously described skull (No. 982), which Mr. Davis, for some reason not apparent, calls mikrocephalic, has only an index of 65. Omitting this one we get from Mr. Davis's four female Siņhalese skulls an average index of 72·7.

It is especially noteworthy that all the particularised Siņhalese skulls (with the exception of skull No. 980 belonging to Mr. Davis, several times mentioned, but left out of the computation) vary within the limits of dolichocephaly, whilst among twenty Vęddá skulls (even after the exclusion of the deformed one) there were found four mesocephalic. Were we perfectly sure of the correctness of the preceding statements, we must infer from them certainly a special similarity of the Vęddá race to the Siņhalese.

As regards the proportions of the single parts of the skull to the length of the whole, I have made a like calculation to that of the Vęddás :—

| | | No. 1. | | No. 2. |
|---|---|---|---|---|
| Index (*a*) | ... | 29·7 | ... | 29·8 |
| Index (*b*) | ... | 55·6 | ... | 53·5 |

On the whole, these measures also are somewhat greater than with the Vęddás, while yet nowise in a constant or characteristic way.

The absolute figures for the greatest length and breadth of the skulls on the whole run higher for the Siņhalese than for the Vęddás. I will next give a list of the length, breadth, and height measures of all the Siņhalese skulls :—

| | | | Length. mm. | | Breadth. mm. | | Height. mm. |
|---|---|---|---|---|---|---|---|
| Dusseau ... | | ... | 180 | ... | 130 | ... | 135 |
| Davis, | No. 315 | ... | 172·7 | ... | 124·5 | ... | 121·9 |
| | „ 979 | ... | 177·8 | ... | 132·1 | ... | 139·7 |
| | „ 981 | ... | 175·2 | ... | 132·1 | ... | 129·5 |
| | „ 982 | ... | 182·8 | ... | 119·4 | .. | 132·1 |
| | „ 983 | ... | 180·3 | ... | 129·5 | ... | 144·8 |
| | „ 984 | ... | 193 | ... | 144·8 | ... | 147·3 |
| | „ 1,007 | ... | 195·6 | ... | 142·2 | ... | 134·6 |
| | „ 1,008 | ... | 198·1 | ... | 144·8 | ... | 147·3 |
| | „ 1,009 | ... | 182·8 | ... | 132·1 | ... | 139·7 |
| Virchow, | No. 1 | ... | 178 | ... | 127 | ... | 129 |
| | „ 2 | ... | 181 | ... | 127 | ... | 132·5 |

We see from these that the greatest length of three male skulls is over 190 mm., and of only four skulls (chiefly female) less than 180 mm. Of the twelve skulls, seven have a length of over 180 mm. The Siṇhalese skulls, according to this, exceed the Vẹddá skulls in length. The result is the same with the greatest breadth. Of the twelve skulls half show a breadth of over 130 mm., three are over even 140 mm. in breadth, only five are under 130 mm.

As regards the vertical height, it is the same with the Siṇhalese as with the Vẹddás, and greater on the whole than the greatest breadth. Only with three (two female and one male) does the breadth exceed the height. On the other hand, in two skulls of women the height is considerably greater than the breadth, viz., about 12·7 and 15·3 mm. In three cases the height reaches a measure over 140, rising in one to 144·8 and in two to 147·3 mm. This is considerably more than with the Vẹddás. Nevertheless, the ratio of length to height reckons for :—

| | Index. | Males. | Females. |
|---|---|---|---|
| Dusseau ... | (1) ... | 75·0 ... | — |
| Davis ... | (4) ... | 74·0 ... | (5) 74·8 |
| Virchow ... | (2) ... | 72·8 ... | — |
| Total ... | (7) ... | 73·8 ... | (5) 74·8 |
| Average of the whole twelve | | ... | 74·2 |

The result, therefore, is a little below the average of the Vẹddás (74·9), and within that of orthocephaly. The figures given by Mr. Welcker (77·2) exceed considerably the above estimate; but if we include them in taking the average, and leave out the estimates of Dusseau, the result obtained for sixteen skulls is 75·1, which is only a minimum over the amount of the Vẹddá index.

The auricular index is likewise less than with the Vẹddás (63·5 and 58·5)—in the latter case less than with any of the Vẹddás.

The total result as regards the formation of the skull is, hence, *that a great correspondence exists between the proportions of the Siṇhalese and the Vẹddás, while the absolute* *figures show the Siṇhalese to exceed the Vẹddás, as a rule, in height.* These differences would in the average be of still more importance if the two skulls I have measured had not suffered from a great variety of impediments to their perfect development. I therefore call attention to the description, and will here only say that there is certainly premature *synosteoses* and much irregularity in the temporal region, especially in the one case, where there is stenokrotaphy, and where the squamous portion of the temporal bone overlaps the frontal bone; and in the other case owing to a great *epipitericum.*

In the latter condition was also found the Vẹddá skull from the Colombo Museum; and a Vẹddá skull from the London Museum shows (as before mentioned) stenokrotaphy.

In examining the form of the face, I follow the same method as before with the Vẹddás, and begin with the orbits.

Unfortunately, a great difference appears in the orbital index of the two skulls I measured, which it is difficult to reconcile, the first being 76·9 the other 82·9—consequently, one chamækonch the other mesokonch. The last will therefore correspond nearer to the Vẹddá skulls. Here I must suspend judgment, for no other observer has recorded orbital measurements of the Siṇhalese, or made any statements about the shape of the orbits. Whether the shape which I have spoken of as inclining to quadrangular is of any significance, must be decided by further observations.

It is the same with the nose index. In the first of my Siṇhalese 57·7, therefore platyrrhine; with the second 46, therefore leptorrhine. Like differences are found, to be sure, in the Vẹddá skulls, whose average shows a mesorrhine measure (52·2), while we might have expected, according to the descriptions of the observers before quoted, a greater uniformity in the shape of the nose. The bony structure of the nose in the Siṇhalese skulls is narrow, prominent, and with a slightly aquiline bridge; and I have the impression that the form, as it exists in skull No. 2, is really the typical one. I have earlier expressed my idea* about a form which is determined by two wholly different factors, not necessarily united to one another, viz., the height of the nose and the breadth of the aperture. But it is not worth while to continue this discussion at present, with so little material.

Only six of Mr. B. Davis's skulls offer material for determining the index of the face, and of these five are female. I have computed them as follows :—

| Skulls. | Height of whole Face. mm. | Transverse Diameter. mm. | Index. |
|---|---|---|---|
| No. 315 ♀ | 109 | 114 | 95·6 |
| „ 979 ♀ | 91 | 117 | 17·7 |
| „ 981 ♀ | 104 | 117 | 88·8 |
| „ 982 ♀ | 102 | 125 | 81·6 |
| „ 983 ♀ | 117 | 127 | 92·1 |
| „ 1,007 ♂ | 130 | 132 | 98·4 |

Here a very considerable contrast appears to the Vẹddás. Whilst the highest measure of the male Vẹddá was 88·2, with the Siṇhalese we have a male skull of 98·4 and two female skulls of 92·1 and 95·6 ; a third female skull has an index of 88·8. There remain only two female skulls with low measures, one 81·6 and one of a weak-minded person, which is 77·7. Whilst the total average with the Vẹddás was only something over 83, I find for the Siṇhalese 89.

If we now reflect that of the female skulls, as a rule, the measure is lower, and that here, of six skulls, five are female, among which is included the abnormally low measurement of the skull of a weak-minded person, we may assume as very probable that the Siṇhalese face index in the classification suggested by Mr. Kollmann (which, however is based upon a somewhat different computation) is leptoprosopic. The smallness of the yugal distance is decidedly in favour of such an assumption.

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* Virchow. Beiträge zür physischen Anthropologie der Deütschen mit besonderer Berüchsichtigüng der Friesen. Abhandlungen der Akademie. Berlin, 1876, s. 143, 350.

Since in both my skulls the lower jaw is wanting, I cannot arrange a corresponding calculation. Added to this, one of them is so greatly changed on the edge of the jaw by age, that it could not even be used for the middle face index. I can therefore simply institute a comparison between one Vẹddá skull (No. 1) and one Siŋhalese. In the following I give an index (*a*) calculated from the proportion of the height of the middle face (root of the nose to the alveolar edge) to the zygomatic diameter, the latter = 100; and a second (*b*) calculated from the same height, and from the molar breadth (lower end of the *sutura zygomatico maxillares*), the last = 100:—

| | (*a*) | (*b*) |
|---|---|---|
| Vẹddá ... | 50·0 ... | 70·1 |
| Siŋhalese ... | 52·6 ... | 60·5 |

Here the result is, as before, less breadth of the whole face with the Siŋhalese, but greater width of front face. The alveolar index of the Siŋhalese No. 1 shows a comparatively high figure, viz., 99, but the facial angle (external meatus, nasal spine, root of the nose) only 75, whilst in the case of the Vẹddás amounting to 82.

With regard to the palate, I have unfortunately neglected to take the measure of it in the Vẹddá skull. I have, however, stated that it was broad, and the alveolar ridge in the shape of a horse-shoe. Contrasted with this, the Siŋhalese palate exhibits considerable difference. According to Dusseau's figures, I reckon a palatal index of 73·7; according to mine, for skull No. 1, of 75·4. Result, a leptostaphyline measure. If we compare the two skulls upon Tables I. and II., below fig. 5, the difference is obvious. Whether it is to be regarded as universal I am not able to say.

On the whole, the osteological investigation of the Siŋhalese face, therefore, confirms what has already become conspicuous from the physiognomical observations of individual reporters; *the skeleton face of the Siŋhalese differs far more from that of the Vẹddás than the skull of the former from that of the latter.* It is distinguished, as a whole, in that it is much narrower. The same is true of the palate, and probably of the nose. On the other hand, the orbits—at least of my Siṇhalese skull—are by no means high. The greatest uncertainty is regarding the form of the jaw-bone. One Siṇhalese skull I have pictured on Table II. is decidedly more prognathous than the Vęddá skull, Table I., but also more than the Siṇhalese skull, according to Davy. The Vęddá skull of Messrs. Quatrefages and Hamy, as well as the Siṇhalese skull of Sandifort, has, however, a very prominent alveolar process.

Before pursuing this comparison farther it will be expedient to discuss the other races of people who must later on be brought into comparison.

### *The Tamils or Malabars.*

As already explained, we understand by this name the Dravidian immigrants who, in historic time, came from many different points on the peninsula of Hindústán, and in the course of over two thousand years multiplied so greatly that they almost exclusively peopled the north and a large portion of the east of the Island, more especially along the coast. When the Portuguese, the first pioneers of European civilisation, obtained a firm foothold upon the Island, the Malabar rule was firmly established in the old *Rájaraṭa*, or *Pihiṭiraṭa*. Moreover, Valentijn* defines their seat in his time as extending up to the river Corunda Waye, which it seems is identical with the Koorinda, or Kirinde-oya ("cinnamon river"), of Sir E. Tennent,† a little river which toward the south-east, near Mahágan, empties itself into the sea. Davy‡ also designates the northerly and eastern coast provinces as the principal seats of the Malabars.

Pridham§ speaks of them as inhabitants of the land from Batticaloa even to Jaffna in the north, and from there as far south as Puttaḷam. It is not to be understood from this, however, that they live even now wholly separated from the Siṇhalese. On the contrary, they are found in no small numbers mixed with other races, especially in the towns, as the description of Colombo by Sir E. Tennent* very clearly testifies. In this city they form a large fraction of the labouring population. It is of special interest to us that in the east they are immediate neighbours of the Vẹddás.

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* Valentijn, *l. c.*, Bl. 49.

† Tennent, *l. c.*, I., p. 41; II., p. 417.

‡ Davy, *l. c.*, p. 108.

§ Pridham, *l. c.*, p. 463.

In fact Wolf,† who found no sort of resemblance between Malabars and Siṇhalese, calls the Vẹddás "another species of Malabar." He describes the Malabars as black, long-haired, and without calves to their legs. Beyond this I find very few statements regarding their physical peculiarities. Most of the writers limit themselves on this point to ascribing to them a stouter physique and greater activity than the Siṇhalese.‡ Mr. Pridham says they either wear the hair carelessly fastened up in a coil upon the crown of the head, or on one side above the ear; sometimes the whole head is shorn with the exception of a single lock upon the crown. Sir E. Tennent§ describes the children of the Tamils as perfectly naked, with glossy black hair and graceful limbs.

To the Tamils, as already stated, belong "the Mookwas, or, as they call themselves, Mukuger." If we may really impute to them a separate origin, as Pridham‖ does, who traces their descent from the Nairs and Mookwas of the Malabar coast, all observers nevertheless agree that from their physical appearance they must be very nearly related to the Tamils, if they are not actually Tamils. The fact that the Mukkávar are Christians, and part of them also Muhammadans, whilst many of the Tamils adhere to the teachings of Brahma, has made the first a special object of attention.

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* Tennent, *l. c.*, II., p. 156.

† Wolf, a. a. O. II., s. 156, 167.

‡ Selkirk, *l. c.*, p. 68. Pridham, *l. c.*, I., p. 465.

§ Tennent, *l. c.*, II., p. 514.

‖ Pridham, *l. c.*, I., p. 466.

Until of late only a single skull of a Tamil or Malabar was known in Europe. This I found in the collection of Mr. B. Davis. Besides this there was in the same collection the skull of a hybrid of Malabar and Siŋhalese (No. 316). Through the kindness of Mr. Freüdenberg, Consul, I have received three Tamil skulls, unfortunately all without the lower jaw, and with these a child's skull, marked Siŋhalese, which I have already described, and of which I entertain the suspicion that it belongs to the group of Dravidas. Properly speaking, we have accordingly only four specimens, in a broader sense we may say six. The first four are recognisable as male, the two last have so slight sexual characteristics that their distinction is doubtful.

The following is a detailed description of the skulls which are at present in my possession.

### *Skull No. 1.*

A still youthful, apparently male skull, without lower jaw, in which all the teeth are erupted, but so far as they are present (the incisors, the right cuspids, and three bicuspids are wanting) are very little worn off; the *synchondrosis spheno occipitalis* is closed. Capacity small (1,155 cub. cm.), ratio of length to breadth (72) decidedly dolichocephalic, ratio of length to height (79·4) quite as certainly hypsicephalic.

Looked at from above the skull seems somewhat unsymmetrical, especially the left parietal eminence, which is lower and flatter. On the contrary, the left half of the *squama occipitalis* is higher and fuller, the right flattened laterally, the lambdoidal angle very irregular, the right leg falling down abruptly close to the continuation of the sagittal suture; the left, on the contrary, extending almost horizontally. The latter, moreover, contains in its lower part, near the side fontanelle, long *ossa wormiana.* The shape of the skull is decidedly long, mainly owing to the very narrow prominent occipital portion. In front, up to the *tubera parietalia,* rather broad, broadest in the region of the latter. Sutures perfect, no trace of *foramina parietalia.* In this region the sagittal suture is rather simple. Strongly marked phænozygy.

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* Barnard Davis. Thes. Cran., p. 134.

At a side view we get the impression of height, and hence also of the shortness. The brow tolerably straight, orbital ridges hardly developed. The upper part of the forehead above the eminences greatly arched, and rising up just in front of the *coronaria.* The descent of the parietal curve toward the occiput is abrupt. High *plana temporalia* intersecting the *tubera squama temp. platt.* Large *alæ,* with very short *anguli parietalis:* at the right 35, at the left 34 cm. broad.

The *norma occipitalis* shows a very high pentangular contour, rather flattened above, horizontal below, with very high and perpendicular sides, only diverging a little below. High and, as mentioned above, very irregular *squama occipitalis,* with somewhat compressed sides, no protuberance; *lineæ semicirculares* well defined, sharp *crista perpendicularis,* slight cerebellar archings, short *facies muscularis.*

In the *norma basilaris* the skull appears broad, especially in the jugular and mastoid region, whilst the occiput is very narrow and prominent. The *foramen magnum* a long oval, somewhat oblique, 34 mm. in length, 26 in breadth, index 76·4. Articulations prominent toward the front. Mastoid processes thick, but not long on either side, with large secondary eminences on the posterior surface, especially prominent on the left side. The styloid processes well developed, the articular surfaces for the lower jaw very deep. *Hamulus pterygoideus* and end of the *lamina externa* very large.

At a front view the head seems high, forehead full, nasal process very broad. Orbits high, with a diagonal widening below and externally; index 84·4, hence mesokonch. *Fissura orbitalis inferior* very wide and hollowed out at the end. Nose narrow above and below; bridge prominent and somewhat rounded; index 48·8, hence mesorrhine. *Fossa canina* a little depressed on the molar bone on both sides; a posterior superior fissure, and a large marginal tuberosity. Alveolar process strongly prognathous, but only 18 mm. long, with very large *alveoli.* Palate deep and broad behind, with slightly horse-shoe shape. Alveolar ridge 90, therefore brachystaphyline. Horizontal plate of the palate bone more prominent anteriorly in the middle; short *spina nasalis posterior.*

### *Skull No. 2.*

A senile male skull without lower jaw, of small, but yet, beside the others, of relatively larger capacity (1,260 cub. cm.), still dolichocephalic (74·8), and of moderate height (length to height index 73·7); very marked places of attachment for the muscles. Occipital protuberance large, almost hook-shaped. The nasal prominence of the frontal bone broad, protruding greatly, and with jagged traces of the lower part of the frontal suture. The right malar bone, with the contiguous part of the upper *maxilla* and zygomatic arch wanting; right side of the skull slightly eroded by decay.

In the *norma verticalis* the skull seems a pretty regular and broad oval, with its greatest extent in the region of the parietal eminences, and slightly phænozygmatic. The middle part of the sagittal suture rather simple, the left *foramen* wanting, the right lying very near to the suture. The lower side divisions of the coronal and of the *sutara spheno frontalis* obliterated; beginning of *synosteosis* of the *spheno frontalis.*

In the *norma temporalis* we see very high planes, which reach above the *tubera* and up to the lambdoidal suture, ending posteriorly on the left in a thick sclerotic surface whose edge overlies the lambdoidal suture; *ala* broad and indistinct on the right, 26 mm. broad on the left.

In the *norma occipitalis* the section is seemingly nearly pentangular, broad, moderately high, with a somewhat flattened roof. The *squama* are large, especially broad; the lambdoidal angle about 160 degrees. The protuberance well developed, as also the *linea semicircularis superior;* in place of the *linea suprema,* however, a flat ridge. *Facies muscularis* strongly marked; cerebellar archings only slightly developed, middle portions rather depressed, near the *crista perpendicularis* two *foramina.*

In the *norma basilaris* the breadth of the middle and posterior regions very evident. *Foramen magnum* very large, long, and somewhat oblique, 38 mm. in length, 28 in breadth, index 73·6. Articulating surfaces very prominent; behind them, on either side, a thickened portion of the edge, especially on the left, which corresponds to an articulating surface on the arch of the atlas. Mastoid processes large and long, with a very deep fissure; very large styloid processes; enormously developed *lamina externa pterygoidea,* larger but thinner Hamular process; to the right quite a long *foramen civinini;* deep glenoid cavities.

In the *norma frontalis* head appears moderately high; face, however, rather short. Large frontal sinuses; nasal eminence prominent, with broad jagged remains of the frontal suture. Orbits high and wide, principally hollowed out diagonally below and externally; index 83·3, mesokonch. Malar bone small; nose above quite small, with sharp and only slightly bent bridge; index 51·1, on the borders of mesorrhine. *Sutura naso frontalis* rather strongly inclining upward, and articulating with the very moderately broad nasal process of the frontal bone. *Fossa canina* full; *foramen infraorbitale* small and flat; alveolar process strongly prognathous: side parts obliterated, only the middle and front still remaining and prominent; palate atrophied.

### *Skull No. 3.*

A still youthful male skull, without lower jaw. All the teeth were fully formed, but the incisors, cuspids, and bicuspids have fallen out; first molars very large, and the crowns greatly worn; only the wisdom teeth without traces of wear, and small; dark betel-colouring of all the teeth. *Sutura spheno occipitalis* closed. Muscular attachments strong, although the bones on the whole delicate. Capacity small, 1,200 cub. cm. Form hypsimesocephalic, although bordering upon dolichocephaly; index of length to breadth 75·3, to height 80·9, strongly prognathous.

Top view: short, especially posteriorly; moderately broad; phænozygmatic; sutures open; sagittal suture in the region of the *foramina* wanting.

Side view: short and high; greatest height behind the line of the ear and two fingers' breadth behind the coronal suture. High, straight forehead, strongly incurvated, with large orbital ridges, deep *glabella*, and well-marked eminences; posterior part long and rising; coronal suture pressed far back. Middle of the head short, and much arched. From the crown a sudden descent, with short arching. High *plana temporalia* reaching to the lambdoidal suture, and here forming a large prominence; *squama temporalis* very flat; on the right stenokrotaphy, with *epiptericum spheno frontalis.* The *angulus parietalis* entirely wanting, the *portio orbitalis ossis frontis* in compensation, slightly arched forward. The *ala* is almost wholly prevented from articulating with the parietal bone: it only touches it at its posterior end, under which the *epiptericum* is pushed. Coronal and spheno temporal sutures run almost in a direct line. *Spheno frontalis* long, in a line with the *squamosa,* which is posteriorly lancet-shaped, 11 mm. long, 5 high; *epiptericum* articulating with the *ala*. *Ala* itself strongly incurvated in the middle, yet broad; on the left the *spheno parietalis* short, the angle little developed, so that the *squamosa* and the *spheno parietalis* and *spheno frontalis* run almost in a line; *ala* flat and broad.

| | | Right. | | Left. |
|---|---|---|---|---|
| *Spheno parietalis* | ... | 1 mm. | ... | 7 mm. |
| *Spheno frontalis* | ... | 23 mm. | ... | 20 mm. |
| Breadth of the *ala* | ... | 25 mm. | ... | 25 mm. |

Back view: very high, sagittal region quite prominent, only the suture itself somewhat depressed. The form of an assumed section, about pentangular, but the upper and lateral surfaces slightly arched. Eminences prominent, *squama* high, lambdoidal angle acute, *squama superioris* strongly arched, protuberance small. *Facies muscularis* large, and, on the whole, arched; cerebellar archings, instead, slight.

Lower view: short, rounded behind; *foramen magnum* short, 34 mm. long, 29 broad, index 85·2; very strong articulating surfaces, placed rather far to the front and near together. Mastoid processes large; left divided, but has a slighter fissure. Deep and large glenoid cavities.

Front view: high, arching pretty regularly above; well-developed nasal eminence, with somewhat porotic surface; in the middle of it a finely indented remnant of the frontal suture, at either side of it an arching forward, owing to the frontal sinuses. High, somewhat oblique orbits, with rounded roof; index 86·4, hypsikonch. Anterior part of the spheno-maxillary fissure broad. Nose narrow above, bridge almost sharp, somewhat deeply incurvated and arched; aperture broad and high; index platyrrhine. *Spina nasalis anterior* large. *Fossa canina* moderately depressed. *Foramen infra orbitale* flattened. Cheek bones projecting greatly, with rather short posterior superior fissure. Alveolar process short, 14 mm., still strongly prognathous, because of the large *alveoli*. Palate very broad; index 87·1, brachystaphyline. Alveolar ridge slightly converging posteriorly, yet somewhat in the shape of a horse-shoe. Teeth on the whole very large. The anterior part of the palate surface forms an oblique descent. Slight *spina nasalis posterior;* large (14 mm. long) palatine plate.

The single skulls present certain peculiarities which impair their typical value. This is especially true of the first, which shows a considerable degree of plagiocephaly, with great irregularities in the lambdoidal suture. In all probability the obliquity has operated as a pressure, which has affected one side of the occiput, but it is difficult to say whether this pressure has been an artificial one, and if it came first after birth. The extent of the aberration in the configuration of the lambdoidal suture appears to indicate rather a disturbance during fœtal life. We found something resembling this in the Siṇhalese skull No. 1, in which the disturbances even extend to the skeleton of the face, and it had better therefore be omitted in the comparison.

The irregular formation of the *processus pterygoides* in the second case, where is found, on the right side, a hyperplasia of the *lamina externa* and a large *foramen civinini*, renders this one also unsatisfactory for an entire comparison. Somewhat more considerable are the temporal deviations in the third case, where at the right is found separating *epiptericum*, and at the left a shortening of the *angulus parietalis;* but we found something similar with the Siṇhalese, for in No. 1 we encountered on either side a frontal continuance of the *squama temporalia*, and in No. 2 a right-sided *epiptericum.* It would indeed be very desirable to have skulls without these individual peculiarities (although possibly somewhat common to the race), but at present they are not to be obtained.

Turning now to the comparison, we find that the average capacity of the skull is very moderate. The skull out of the Davis collection is the largest; its capacity 1,375 cub. cm. Mine have 1,155, 1,160, and 1,200 cub. cm. The average amounts to 1,247 cub. cm., hence somewhat less than the average of the Vęddás (1,261 cub. cm.), and very much less than that of the Siṇhalese (1,406 cub. cm.). Considering the small number of Tamil skulls, I should not be willing to take this proportion as the standard, but it shows that the low figures of the Vęddá skulls must not be looked upon as wholly exceptional. The skull of a hybrid in the Davis collection has a somewhat higher measure, viz. (according to Mr. Welcker's tables), 1,325 cub. cm. My doubtful Siṇhalese skull, No. 3, although belonging to a child, is also comparatively roomy, its capacity being 1,250 cub. cm. But these specimens cannot be taken into consideration in computing the average.

The horizontal circumference of the skull out of the Davis collection amounts to 495 mm.; mine measure 477, 490, and 473 mm., giving an average of 483 mm., differing little from that of the Vẹddás and the Siṇhalese, though somewhat smaller than with the latter. The hybrid, No. 316, of Mr. Davis has only 475, not much more than the Siṇhalese (?) child, 472 mm.

The vertical circumference, on the other hand, constantly rises above that of the Vẹddás as well as the Siṇhalese. It amounts in my three skulls, in the average, to 306 mm., against 289 with the Vẹddás and 295 with the Siṇhalese. This average is only 174 mm. smaller than that of the horizontal circumference of the corresponding skulls (480 mm.), which is 63·7 per cent., against 59·4 with the Vẹddás and 60·5 with the Siṇhalese. This difference is very noteworthy. It is found also with the child (Siṇhalese No. 3).

The circumference of the skull from Mr. Davis's collection, taken through the sagittal suture, measures 353 mm.; that of mine 359, 351, and 352; therefore, in the average, 353 mm., against 376 with the Siṇhalese and 363 with the Vẹddás. Plainly the question here, however, is as to the complementary relation to the vertical measure, for the sagittal circumference in length amounts in the case of the—

| | | | |
|---|---|---|---|
| Tamils, to | ... | ... | 73·0 per cent. |
| Siṇhalese, to | ... | ... | 74·3 „ |
| Vẹddás, to | ... | ... | 74.5 „ |

of the horizontal circumference.

In an investigation as to the share of the individual portions of the roof of the skull to its whole circumference *(scheitelbogen)*, the striking anomaly is directly presented of the plagiocephalic skull (No. 1 in my collection), which is remarkable for the great development of the middle and back parts of the skull-roof, owing to which there is a perfectly abnormal shortening of the frontal portion. This will be best understood by a comparison of the figures.

| | Frontal. mm. | Parietal. mm. | Occipital. mm. |
|---|---|---|---|
| Davis, No. 314 | 129 | 122 | 102 |
| Virchow, No. 1 | 117 | 132 | 110 |
| Do. No. 2 | 134 | 120 | 97 |
| Do. No. 3 | 130 | 122 | 100 |
| Average | 127 | 124 | 102 |
| Average (omitting No. 1) | 131 | 121 | 99 |

Calculated according to the percentage of the whole sagittal arch :—

| | Frontal. mm. | Parietal. mm. | Occipital. mm. |
|---|---|---|---|
| Davis, No. 314 | 36·5 | 34·5 | 28 8 |
| Virchow, No. 1 | 32·5 | 36·7 | 30·6 |
| Do. No. 2 | 38·1 | 34·1 | 27·6 |
| Do. No. 3 | 36·9 | 34·6 | 28·4 |
| Average | 36 0 | 34·9 | 28·8 |
| Average (omitting No. 1) | 37 1 | 34·4 | 28·2 |

It is clear from this that for a precise comparison No. 1 must be left out entirely. The two others, however, previously mentioned, viz., that of the hybrid (No. 316) from the Davis collection and that of the child marked Siŋhalese No. 3 from mine, very decidedly approach the Tamil type. They coincide so exactly with one another that the suspicion of the child's skull being really a Tamil skull, or at least a hybrid, grows upon me strongly. The figures for these are the following :—

| | Frontal. mm. | Parietal. mm. | Occipital. mm. |
|---|---|---|---|
| Davis, No. 316 | 122 | 125 | 104 |
| Virchow, No. 3 | 121 | 125 | 103 |

Or per centage :—

| | | | |
|---|---|---|---|
| Davis, No. 316 | 34·7 | 35·6 | 29·6 |
| Virchow, No. 3 | 34·6 | 35·8 | 29·5 |

Contrasted with the Tamils proper the brow here recedes somewhat, whilst the occiput and parietal portions are more developed, and owing to this all the Tamil relations are a little changed.

If, on the other hand, we compare the Tamils with the Vẹddás and the Siṇhalese, a radical contrast appears, especially as regards the share of the brow and the upper part of the occipital bone in the forming of the skull-roof. Whilst with the Tamils it culminates in the frontal division, with the Siṇhalese, and still more with the Vẹddás, the occipital is strongly developed. The hybrid, in the stronger parietal development, comes nearer to the Siṇhalese.

Still more striking are the variations in regard to the form of the head. To be sure, my plagiocephalic Tamil skull, No. 1, here takes an exceptional place, because owing to its surprisingly little breadth (126 mm.) it gives a low dolichocephalic index (72). On the other hand, the skull out of the Davis collection has a high mesocephalic index (79), and of my two Tamils, one (No. 2) is at the extreme boundary of dolichocephaly (74·8), the other (No. 3) even beyond this, and at the beginning of mesocephaly (75·3), the average being 76·3, therefore mesocephalic. The two hybrids show the same relations; skull No. 316 of Davis has an index of 76·7, the child's skull in my collection has one of 77. This, contrasted with the excellent dolichocephaly of the Siṇhalese, and, with a few exceptions, of the Vẹddás also, is a very important result.

The smaller occipital development of the Tamil can be seen from this, that the horizontal length of the occiput in relation to the entire length (*a*) is less; on the other hand, the basilar length in the same relation (*b*) is greater.

| | No. 1. | | No. 2. | | No. 3. |
|---|---|---|---|---|---|
| (*a*) | 27·4 | ... | 23·4 | ... | 27·0 |
| (*b*) | 57·1 | ... | 54·1 | ... | 55·8 |

The greatest length on an average is small. With Davis it amounts to 173, in my skulls to 175, 179, and 170; hence in no case reaching even the moderate measure of 180 mm. The hybrid from the Davis collection measures only 168 mm., while my child's skull measures 172. The greatest breadth, which is always in the parietal region, is found in a skull of

Mr. Davis's, 137 mm.; in mine it is 126, 134, and 128; in that of the hybrid 130; in the child's skull 132 mm.; hence in none of them anything considerable. In comparison with these the measures of the vertical height are 137·5,—remarkable: in the same order they are 132—139, 132, 137·5,—132,—and 133. The greatest number here, therefore, is that of the plagiocephalic skull, No. 1, which must be left out of consideration. All the remaining figures are very moderate, even small as contrasted with the Siŋhalese, in fact almost on the borders of the Vęddá figures. The breadth is greater than the height in two out of the three typical Tamils.

The matter takes another aspect if we consider the figures of comparison. The length to height index amounts with Mr. Davis to 76, with my three skulls to 79·4, 73·7, and 80·9, with the hybrid 78, with the child's skull to 77·3. From this the average of the three typical Tamils is 76·8, which corresponds with the hybrids. This is a decidedly hypsicephalic measure, larger than that of the Vęddás (74·9) or of the Siŋhalese (74·2). This, then, may be included among the diagnostic points.

The auricular index is also correspondingly high. I found it 66·3, 63·1, and 68·8, and with the child 67·4.

Whilst a comparison of the bony skull of the Vęddá with that of the Siŋhalese proves great similarity, as compared with the Tamil, on the contrary, a great difference is observed. The skull of the latter is hypsimesocephalic, and even when the measure of the contents shows very slight variations, great differences appear in the circumference measures. How much the latter were to be seen in the sagittal circumference and in the share of the different parts of the roof of the skull, has been previously explained in detail.

If we now turn to the shape of the face, we find that with the Tamils it is quite regular.

The orbital index amounts to 84·4, 83·3, and 86·4, hence in the average 84·7, a high mesokonch measure. The child's skull also gives 83·3. Very similar is the index of the Vẹddás, while, on the other hand, that of the Siṇhalese seems to be lower. On the whole the orbits are high, in one case (No. 3) even hypsikonch, the upper edge in most somewhat bent, and the diagonal from within and above downward and outward lengthened.

The nasal index of my three skulls shows 48·8, 51·1, and 53·1, —an average of 51, hence on the extreme verge of mesorrhiny. No. 3 only is platyrrhine. The child's skull alone gives the high platyrrhine measure, 55·5. In so far the Tamil nose probably resembles the Vẹddá nose more than the Siṇhalese. But here also the index gives no distinct idea of the shape of the nose. In its bony parts it is throughout narrow and prominent, although the nasal process of the frontal bone is very broad. The bridge is a little bent in, rather sharp and aquiline. The nose, however, with them all is of little height, which may in the living have rendered it quite different from the Vẹddá nose.

The face measures are scarcely satisfactory. Only the skull in the Davis collection has a lower jaw, and in this the index is 85·7, a mesoprosopic measure. Of my skulls, the senile (No. 2) must be omitted because of its defective alveolar processes; the other two have middle-face indices of 51·6 and 53·4. The relation of the molar breadth to the middle-face height amounts to 68·8 and 62·3. The Tamil face occupies a middle position between the Siṇhalese and the Vẹddá face: it is shorter than the first and longer than the second.

As regards the alveolar index, this amounts to 90, 94·8, and 97·8, therefore in the average 94·2. The degree of prognathy, which is quite clear with the Tamils, is with no more certainty to be ascertained from this than from the (nasal) facial angle. The size, especially of the *alveoli* of the incisors, necessitates a strong projection forward of the alveolar process. But the palate also is decidedly broad; hence we have a palatal index of 90 and of 87·7, a brachystaphyline measure. And herein lies a very striking contrast to the Siṇhalese. The size of the palatine plate of the *os palatinum*, on the other hand, shows a certain similarity to theirs.

### *The Moors, or Moormen.*

According to the information which I have already given Arabian colonies were at a very early period established in Ceylon for commercial purposes. Even at the present day a large part of the smaller traffic is in the hands of these people, who are still engaged in maritime intercourse with the Continent. Sir Emerson Tennent* deduces from this the appellation "*Marakkala-minisu*," or "Mariners." There are, however, "Moorish" villages and settlements also upon the Island. About Batticaloa especially, they seem to have introduced, or at least to have here brought to greater perfection, the culture of the palm, in the same way as in the south of Spain.† But in spite of this their number is small, and their effect upon the rest of the population even less highly to be estimated, because of their religion, which necessitates a sharply-defined separation, so that they rarely intermarry with the Siṇhalese or other natives.‡ I would not, however, omit them, since in a very characteristic way they occupy a distinct place under the caste organisation. As mentioned they are "attached" to the *Kshudrawaṇsa*, and among them to the Fisher caste (*Karawé*).

Unfortunately we have scarcely any descriptions of their physical peculiarities. Wolf,§ who certainly seems to include all sorts of people under the name of "Black Turks," says the Moors are black, but have strong limbs, thick calves, and shorn heads. Thunberg || describes them as large of stature, darker than the rest of the islanders, and well clothed. Pridham¶ declares them to be the handsomest race in the Island, after the European, of martial appearance, and almost without exception tall and well formed. Davy says, "In dress,

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* Tennent, I., p. 632.

† *Id.*, II., pp. 456–58.

‡ Pridham, I., p. 479.

§ Wolf, a. a. O., I. S. 169.

|| Thunberg, vol. IV., p. 188, quoted by Philalethes, *l. c.*, p. 244.

¶ Pridham, *l. c.*, I., p. 479.

appearance, and manners they differ but little from the Siṇhalese."

So far as I can learn there is only one skull of a "Moor" in Europe, and that is in the possession of Mr. Barnard Davis.[*] This one (No. 317 of his collection) came from Colombo. It is a male skull of 1,495 cub. cm. capacity, therefore tolerably large, with a length and breadth index of 70, length to height index of 71, and a face index of 85·7; it is accordingly orthodolichocephalic and chamæprosopic.

A farther comparison is scarcely desirable, because from a single skull no judgment can be formed as to whether it is really typical of the race.

### *Malays.*

We have earlier discussed the existence of a scattered Malay element. A few statements as to their physical condition have come to us.

Cordiner[†] describes them, as in contrast to the other races, lighter, more inclining to copper-colour than any other of the Indian races. Selkirk[‡] speaks of them as nearly of a copper colour, rather below the middle size, with "flattened foreheads, broad faces, large flat noses, and sharp, fierce revengeful eyes." Pridham[§] describes them similarly, and calls them by no means agreeable specimens of humanity. They are active, of a slight yet muscular form.

In the Davis collection there is a Malay skull from Colombo. It is marked male. Its capacity amounts to 1,435 cub. cm.; the length to breadth index is 79, length to height index 76, face index 108. It is therefore hypsimesocephalic and leptoprosopic.

### *Mutual Relation of Races.*

It is conceivable that the question of the origin and relationship of the different tribes existing close to one another in Ceylon should very early have interested the visitors to the Island.

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[*] Davis. Thesaurus Craniorum, p. 134.

[†] Cordiner, *l. c.*, p. 143.

[‡] Selkirk, *l. c.*, p. 74.

[§] Pridham *l. c.*, I., p. 483.

In 550 B.C. Cosmas Indicopleustes, who lived under Justinian, states, upon the ground of reports from the Greek traveller Sopater, that the natives of Ceylon belonged to different races: he calls them expressly ἀλλόφυλοι.* Even the Chinese were aware that the north of the Island was inhabited by quite a different race from that of the south; the men in the north (the Tamils) they compare to the Hu (Hoo), a people of Central Asia; in the south (the Siṇhalese) to the Liau (Leaou), a mountain tribe in west China, to whom they ascribed "large ears, long eyes, purple faces, black bodies, moist and strong hands and feet," with a long life of a hundred years and more, adding that the men, as well as the women, wore their hair "long and flowing."†

Evidently these old Chinese reporters found no analogy between the Siṇhalese and the Chinese themselves. Nor have they, so far as I know, left behind any accounts from which to conclude that a Chinese colonisation of the Island had ever taken place. All that is gathered from their reports‡ is confined to information about the mercantile and religious institutions, and to one warlike enterprise of the Chinese; but the reports do not come down further than the fourth century of our era, and the defeat of a king of Ceylon by a Chinese army, which occurred as late as the year 1408. Except the statement that in the year 1266 Chinese soldiers entered the military service of king Parákrama, there is no mention made of any longer stay or actual settlement of the Chinese in Ceylon. Notwithstanding this, the Portuguese writer Ribeyro§ has expressed his opinion that the original population of the Island may have been Chinese. Knox‖ also heard this story from some Portuguese, but says very decidedly: "But to me nothing is more improbable than this story. Because this people and the Chineses have no agreement nor similitude in their features, nor language, nor diet," and adds: "It is more probable they came from the Malabars, their countrey lying next, tho they do resemble them little or nothing. I know no nation in the world do so exactly resemble the Chingulays as the people of Europe." Here we must remember that he looks upon the Veddás and Siŋhalese as belonging together: "Of these natives there be two sorts, wild and tame."

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* Tennent, *l. c.*, I., p. 568.

† Cited by Sir E. Tennent (I., p. 611) from Chinese works.

‡ Tennent, *l. c.*, I., p. 607, *et seq.*

§ *Id.*, *l. c.*, I., p. 327, note 2.

‖ Knox, *l. c.*, p. 61.

This certainly ingenuous statement is of great value. The reference to the Malabars is, as we see, purely speculative. In reality Knox denies any resemblance of the Siŋhalese to the Malabars, and finds them much more like the Europeans. This is the first unequivocal testimony to the Aryan origin of the Siŋhalese, which since then has been assumed by so many visitors. Davy[*] says: "The pure Singalese of the interior are completely Indians in person, language, manners, customs, religion, and government." He leaves it indefinite which division of Indians he has in mind, and his mentioning the religion seems to exclude the Aryan or Brahminic division. Certainly he did not refer to the inhabitants of the peninsula of northern India—the so-called Indo-Chinese.

Philalethes[†] and Pridham[‡] alone among the more recent reporters express their conviction of the Chinese origin of the Siŋhalese; both, however, not from anthropological reasons, but on historical grounds, and the latter with reference to the system of drainage and terrace building of the Siŋhalese, which he traces back to China. The historical grounds are of little importance. With regard to drainage, though the invention of this system may unquestionably be ascribed to the Chinese, Sir E. Tennent has proved that "the tank system" in Ceylon is of Tamil origin, and was introduced from Hindústán in the fourth century of our era.

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[*] Davy, *l. c.*, p. 109.

[†] Philalethes, *l. c.*, p. 15, note †.

[‡] Pridham, *l. c.*, I., p. 21.

After the previous statements no elaborate proof is needed that neither Siṇhalese nor Vęddás, at least in the form of their skulls, present the slightest indication of any relationship to the Mongols. Such a remarkably dolichocephalous tribe has never yet been found among the Mongols. What truth there is in the old Chinese story of the similarity of the Siṇhalese to the Liau in west China I cannot judge; but it is not even proved that this people is to be regarded as belonging to the Mongols proper. We might rather connect them with the present Låos (on the boundary between China and Siam), whom Gützlaff,* according to their complexion, distinguishes as black and white. According to the opinion of Mr. Schott,† however, the Liau are rather identical with the Ljaos, of whom he states only that they were "south-western aliens," therefore, at any rate, not Chinese. Until we have more precise information about this south-western people, which happily is now in prospect, we cannot draw from this citation any important conclusions regarding the physical constitution of the Siṇhalese. I will not, however, pass over in silence the fact that according to an old tradition already mentioned by Valentyn, the Sihala dynasty, from which Wijayo the conqueror was descended, had their residence in Tenasserim; so that according to this a Siamese origin is ascribed to the Siṇhalese. Since, however, all the more recent investigations agree in this, that the dynasty, as well as the language of the Siṇhalese, is derived from Magadha, the present Behar, that is, from the very midst of the Ganges land, there is no need of our following up the tradition. Besides, it is not the search for the Siṇhalese origin which claims our first interest, but fathoming the derivation of the Vẹddás.

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* Prichard, *l. c.* Third edition, London, 1884, vol. IV., p. 503.

† Professor Schott communicates to me the following: "The word *Ljao*, of which I thought at first, is the name of a river in the present Mandshooria, after which a Tartar dynasty was named, who for some time ruled over north China. Another *Ljao* (in different dialects *lao*, *lio*, *liu*, formerly even *lot*), which indeed is the one for us to consider, is written very like the former. This signifies, with an added *ja* ('back tooth'), 'prominent teeth,' and is besides, in itself alone, the name for certain south-western outlandish tribes, as I see from the original dictionary, named after the Emperor Kang-hi. The tribe southward from Yun-nan, called by the Europeans *Laos*, is, as far as I know, by the Chinese never called anything but *Lao-tschua*, from *lao*, 'old man,' and *tschua*, 'to beat the drum.' This drum-beating old man is evidently a mere counterfeit of a non-Chinese word, as, for instance, *lang-ja*, 'wolf-teeth,' is the Chinese rendering of *Langka*, that is the Indian name of the Island of Ceylon. Corresponding to the old name for a people or peoples, *Hu*, which designated, in general, the population of central Asia to the north of China, and among these the *Hjün-nu*, or *Hjung-nu*, who have often been confused with the *Huns*, and are certainly in name identical with them, is a word signifying, in its appellative sense, the dew-lap of an ox. Another *Hu*, differently written and distincty national, I cannot trace."

Even in case we consider the Vẹddás to be, as some say, savage Siṇhalese, or the Siṇhalese to be tame Vẹddás, as others say,—thus deducing both from one and the same original stock,—we cannot but begin our investigations with the Vẹddás. A reverse order would be justified only if we assumed that the Vẹddás had sunk back from a condition of higher civilisation to the most absolute savagery, in which condition all travellers have found them for many centuries. The theoretical objection to such an assumption I have pointed out already, and will not bring it up again. But I ask, what signs of an earlier civilisation have actually been found? Have the remains of a higher culture been discovered anywhere upon the Island, which, with any show of probability, might be attributed to the Vẹddás? To my knowledge there is nothing of the kind, not even rubbish-heaps (*kjökkenmöddinger*) such as are found in an excellent state of preservation in the neighbouring Andaman Islands. Not one stone implement, such as even the Australian possesses in manifold forms, has been found. Now it is just conceivable that these gaps may be filled by further researches, especially since the above-mentioned remark of Mr. Hartshorne awakens at least a hope of stone axes. But what will be gained even by this? At best the possibility of placing the Vęddás on a level with the Andamanese and the Australians, whilst, according to the present facts, they must be placed decidedly lower. A people who do not even possess clay vessels, who have no knowledge of domestic animals beyond the dog, who are unacquainted with the simplest forms of gardening and agriculture, who lack almost every kind of social institution, who are not even counted among the outcasts by their civilised neighbours, cannot possibly ever have had the means which make a higher culture of any kind possible. *The hypothesis of a return to barbarism must hence be definitely given up.*

The ground for such an assumption could only be found in the language. How great the difference of opinion with regard to the place which should be given the Vęddá language I have already shown. That it is no Dravidian idiom fundamentally seems to me proved beyond a doubt from the testimony before us. A great number of high authorities, among them some of the first linguists, declare it to be rather a Siṇhalese than an Aryan dialect. But whether the Siṇhalese itself corresponds to one of the other Indo-Aryan languages is again contested. But even if, with the well-informed Childers, we take it for ancient Páli, or rather a primitive sister dialect of the Páli, it will then truly be very difficult for any one to argue from it, and still less from the Sanscrit words intermingled with it, the derivation of the Vęddás from the valley of the Ganges.

For centuries they have been surrounded by more highly cultivated people, and even if they, from shyness, have remained hidden in their forests, a certain intercourse with their neighbours has yet been unavoidable. Where the Tamils have continuously pressed on nearer to them, as in the vicinity of Batticaloa, a part of the Vęddás have adopted the Tamil language.* But during a very much longer period, and in the greater number of places, they were in immediate contact with the Siŋhalese, to whose kings they stood in a kind of subjection, and from whose line their own chiefs were appointed. What wonder, therefore, if they adopted more and more Siŋhalese words and forms? The question is only whether, beside these, as I suppose, borrowed words, their language has not preserved some individual elements? To this point the collectors of vocabularies and comparative linguists seem to have given very little attention. And yet the words of doubtful origin, as Mr. Hartshorne has designated them, should be most carefully collected and tested. Thus far we are not even informed positively whether the Vẹddá language contains any words designating numbers. What use is it for our investigation that Mr. Max Müller declares more than half the Vẹddá words (that is, of those noted down by travellers) to be corrupt Sanscrit? Where belongs the other half, even if smaller, which perhaps with greater attention might be enlarged? If we cannot class it among the Tamil languages it is very possible that it may prove specific. Nothing hitherto justifies us, it seems to me, in any such one-sided statement as that of Mr. Edward Tylor, who calls the Vẹddá language, without hesitation, Aryan.

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* Cordiner, *l. c.*, I., p. 91. Bailey, *l. c.*, p. 305, note.

The matter would take a rather different aspect if we might assume that originally the Vẹddás alone inhabited the whole Island, and that they were not only forced back into the forests by the immigrants, but had intermingled with them. Of the Tamils, who did not immigrate until later, we may say that in the north they have, in fact, supplanted the original population, but that in the east they have not merely mingled with the Vẹddás, but have accomplished a veritable Tamilisation of the Vẹddás. This appears, however, unimportant for the essential point. Not so with the Siŋhalese. If we follow the statements of the native analyists, the origin of the Siŋhalese is to be traced back to the followers of king Wijayo, a victorious host of immigrants from the valley of the Ganges. It will not be necessary to take the number of seven hundred people from Magadha (Behar), as the annals give it, quite literally, but whatever it was, the proportion must have been something like that of the Danes and the Normans in England. The larger part of the Island was divided into fields and gardens, and a patriarchal system introduced which has lasted for thousands of years. A series of facts testify that the aboriginal population was not wholly excluded from this system; even the circumstance that the Vęddás were reckoned among the high caste of agriculturists (*Goyiwaṇsé*, or *Vellála*) clearly indicates that an established position was early insured to them in the political organisation of the country. Upon such a foundation the intermingling of the Magadha people with the aborigines would most naturally take place, and if we look upon the Siṇhalese race as the result of this commingling, the experience of so many other countries where a similar intermingling took place would make it perfectly explicable that the Magadha people made their language, the old Páli or Eḷu, the ruling one, while in their physical conformation the aboriginal element won lasting influence.

With such a view of the matter the Vęddás and Siṇhalese would neither be identical nor distinguished from one another simply by a degree of culture. The Vęddás would appear rather as representatives of the aboriginal race; the Siṇhalese, on the other hand, as hybrids, produced by a union of immigrant Indians with Vęddás, and therefore varying according to the measure of the participation of either of these elements. This indeed strikes me as being the solution of the anthropological problem before us, so far, at least, as the material at present reaches. The linguistic difficulty, that also the unmixed natives adopted the Aryan language of the conqueror without, as far as we can judge, having been forced to do so, appears to me no longer insurmountable, since from personal experience I have established the fact that in the Baltic provinces of Russia one part of the Finnish population after the other, through imperceptible but steady progress, has become Letticised to such an extent that the Courland language has wholly, the Livonian almost wholly, disappeared, and only the Esthonian still offers any resistance.*

Considered simply on anthropological grounds, the differences between the Veddás and the Siŋhalese are not so great as to oblige us to assume an absolute contrast in the two tribes. I will not deny that the number of skulls we know to be authentic, which I could personally test by comparison, is too small to lead to a definite conclusion; but they seem sufficient to enable us to ascertain whether any reason exists for distinguishing results obtained in other ways. Such reason I do not find. After having with the greatest caution excluded the skulls which were of doubtful origin, as well as those which through peculiar malformation showed great aberrations, there still remains, with the addition of skulls found in foreign collections, so great a number of useful specimens that they much exceed what stands at our disposal relating to other tribes.

Comparing briefly what has been arrived at, the result is first, that the Veddás, as well as the Siŋhalese, are dark tribes, whose complexions vary between yellow-brown and black. The greater number of observers describe the Siŋhalese as not actually very dark, but rather of a chestnut-brown, or brown with a yellow undertone. Percival describes the women as of a yellow colour; Cordiner and Selkirk assert that the insides of the hands and feet are white. The accounts do not attribute to the Veddás such fair skins; the report of Percival that the Veddás are copper-coloured and fairer than the rest of the Siŋhalese is wholly unsupported.

But even allowing that a considerable amount of difference in colour exists between the two tribes, it may at least be taken into consideration that the Veddás are naked, exposed to all the inclemencies of the weather, without regular habitations, and, moreover, dirty in the extreme—conditions which, even in our climate and under much less trying circumstances, would be enough to bronze the skin very deeply. The Siṇhalese, on the other hand, are more or less completely clothed, wearing something at least on the lower part of the body, live in regular houses under relatively favourable conditions, and are often distinguished for great cleanliness. If then, as reported by travellers, very dark, almost black individuals are by no means uncommon among them, it is certainly a noteworthy fact.

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* Zeitschrift für Ethnologie. Verhandlungen der Berliner Anthropologischen Gesellschaft, 1878.

The character of the hair also is plainly similar, only that here the effect of culture is conspicuous to a much higher degree. Whilst the Vęddás never comb theirs,—perhaps, in general, do not interfere with it in any way,—so that from year to year it becomes more and more dishevelled, and in a bushy matted mass covers head, face, and shoulders, the Siṇhalese exercise a quite unusual womanly care in smoothing and arranging their hair. Both tribes, however, wear the hair long; it is black, luxuriant, and a little wavy; only with the Vęddás, owing to neglect, it hangs down in a tangled but not curly manner; the tresses, properly speaking, notwithstanding, are neither curly nor woolly. We will add that in single cases a more curly kind of hair is seen,.as in that of the elder man among the drawings given,* though even in his case the hair is long and wholly different from the little close rolls and woolly hair of the real Negroes and Negritos. Had it early been cleaned and combed it would probably be like that of the Siṇhalese, glossy as ebony. The picture of the young girl in the drawing* seems to exhibit just this improvement.

A very remarkable statement, looking at the matter as it were from the other side, is to be found in d'Albertis.† This traveller had engaged in Point de Galle, two Siṇhalese for his researches upon New Guinea. When these Siŋhalese had become acquainted with the natives of Yule Island (in the Gulf of Papua, at the south of New Guinea) they told him these people resembled their own country people, only that their complexions were not so dark. When he called their attention to the fact that the hair of these natives was "fuzzy" they replied that the Siŋhalese also would have "fuzzy" hair if it were not daily combed and carefully oiled. M. d'Albertis mentions in connection, that the hair of one of the Siŋhalese, who wore it short, was crisp, and that of the other, who wore it long, was smooth; he also does not deny that many of the natives resembled the type of his Siŋhalese. Even setting aside this analogy, as drawn from only two persons, still this statement, so wholly impartial, pretty conclusively proves that the Siŋhalese hair, when uncared for, strongly resembles that of the Vẹddás. A marked contrast is, at any rate, implied to the smoothness of hair of the Malays and Mongols; and the ἀπλότριχα of Palladius must not be understood in the sense that the hair of the Vẹddás is called smooth without any reservation.

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* No drawings are reproduced.—*Hon. Sec.*

† L. M. d'Albertis. New Guinea. London, 1880, vol. I., p. 259.

Reports with regard to the colour of the iris are less complete, but we gather from the descriptions that, as a rule, it is dark. As to the Siŋhalese, Davy makes more explicit statements, and from these we learn that the eyes are generally black, seldom hazel, rarer still grey, but only among the Albinos light blue or red. To be sure, in the poetic description of an ideal Kandy beauty given, "eyes, the blue sapphire and the petals of the blue manilla flower" are considered desirable, but this can hardly be said to refer to a typical peculiarity. Nowhere is anything of the kind mentioned of the Vẹddás, and we may therefore assume their iris to be really black or dark brown.

As regards size, plainly both races are of moderate stature, rather short than tall. If the height of the Vẹddás on the average is 1,537 for the men, and for the women 1,448 mm., with the Siŋhalese, on the other hand about 1,625 to 1,650 (men), the significance of the shorter measure of the Vęddás cannot be doubted, and much less since we find the minimum measures for the men amounting to only 1,245 mm.

The information about the Siŋhalese is unfortunately very incomplete ; in one thing, however, all observers agree, that they are smaller and less vigorous than the Europeans. Whether there is only a relative difference in size between Siŋhalese and Vęddás, whether the latter were stunted in growth in consequence of their wretched life, or whether their shortness is a typical race peculiarity, is still doubtful ; yet the fact that they are not all dwarfs, but that comparatively large Vęddás are met with (for the very scrupulous Mr. Hartshorne gives the measure of one man as 1,638 mm.), may be adduced in favour of the hypothesis that their often dwarfish size is a result of long-continued unfavourable conditions for development. Nevertheless, the fact in the main is well established that the Vęddás belong to a small, indeed to one of the smallest known races. If we add that the *Vędiraṭa* is extremely rich in game, that the Vęddás are skilful hunters and fishers, that honey and edible fruits and roots stand in plenty at their command, we cannot say that, like the Australians, they suffer from enforced deprivations. If, notwithstanding, they are much smaller than the Australians, it seems to me we must recognise their smallness of stature as constitutional.

Concerning their development of muscle and strength of body, the witnesses testify loudly in favour of the Vęddás. Though the fleshy parts are rather slender, perhaps even lean, the Vęddás seem to possess, in general, great capacity for active effort, and limbs of good proportions. Compared with the Siŋhalese in the lowlands they may be said to show a certain superiority in all work requiring muscle, for it is the Siŋhalese of the mountains only, especially the Kandyans, who are renowned for physical strength. The shortness of the thumbs and pointed elbows, emphasised by Mr. Hartshorne, may be explained among the Vẹddás, perhaps, by their shortness and leanness;—at any rate, only the first would be of any importance if it should be proved by measurement to be altogether disproportionate. Perhaps we meet here, however, with a deception similar to that of Mr. Bennett's, who lays such stress upon the length of the foot, whilst direct measurement shows perfectly fair proportions. It may be true that the Vẹddás are flat-footed, but this would not be sufficient to constitute a race-distinction.

Similar observations, only still less distinctive, we find in regard to the size of the head, especially the capacity of the skull. The single numbers, as well as the averages, I have already given, and compared with one another. The result proves that the Vẹddá skulls on the average are much smaller than the Siŋhalese; in fact, that a certain number of them can be called positively nannocephalic. The Siŋhalese skulls, however, have only a capacity on the average of 1,406 cub. cm., and among eleven examples only three between 1,100 and 1,200 cub. cm. If we weigh against this that also among the Vẹddá skulls were two of 1,614 and 1,420 cub. cm., it follows that (supposing these skulls to be genuine) not only is nannocephaly no constant characteristic, but skulls of even great capacity are found among the Vẹddás. The numbers slide over from both sides; the highest average of the Siŋhalese does not prevent the occurrence of very small examples; and *vice versâ*, the certainly very low average of the Vẹddás includes some pretty large specimens.

I will not rehearse the length measurements and the relations deduced from them. In this way certain differences between the two tribes have come to light, but we shall be able to represent them parallel to each other in the indices. To only one of the proportions will I here call attention, because this may be of considerable importance, viz., that with the Siŋhalese the front and middle head have a larger share in forming the roof of the skull, while with the Vẹddás it is the occipital region. Yet I am bound to mention that the frontal breadth (lower) of the Vęddá skulls from the Colombo Museum was by no means less than that of my Siņhalese.

Of special interest is the comparison of the skull indices. The average ratio between length and breadth which I have ascertained is for both tribes almost identical: 71·8 for the Siņhalese, 71·6 for the Vęddás. This is a highly dolichocephalic measure. If by this is proved that all the Siņhalese skulls we have for examination are dolichocephalic, and that among twenty-eight Vęddá skulls four were mesocephalic, we might suspect Tamil skulls had been intermingled with the latter. This cannot be decided without new and very sure material. For our present comparison we can only assume that these important relative measures do not point to any radical difference in race between Siņhalese and Vęddás. With both the skull is long and narrow, yet among the Vęddá skulls there is a greater number in which the narrowness is extreme than among the Siņhalese.

It is the same with the ratio between length and height. This is orthocephalic with both tribes—with the Vęddás indeed even to the border of hypsicephaly (74·9), with the Siņhalese somewhat less (74·6). But we must, in both kinds of skulls, calculate from those of medium height. With reference to the height measurements the ratio is somewhat different, in so far as here the larger figures are on the side of the Siņhalese.

These coincidences of the main indices are so great that they could not be greater within the limits of a single race. The configuration of the capsule of the skull may, aside from the share of the separate bones in it, be considered as identical. In fact, according to the testimony of travellers, the difference of race is more conspicuous in the face than in the skull. It is chiefly in the form of the nose, particularly the flatness of its ridges and the breadth of the nostrils, but likewise to the form of the lips and jaws, which are throughout described as prognathous, the various authors call attention, as being characteristic features of the Vẹddá face. Contrasted with the Siṇhalese nose, which the old Chinese reporters call a bird's beak, and in the description of the Kandy beauty is compared to a hawk's bill, contrasted with the delicate lips and orthognathous jaw, which we perceive in Davy's drawings, we find certainly very striking differences.

Osteological investigation has, regarding the main facts, confirmed these observations made among the living. Unfortunately we have not been able to turn the skulls found in Europe to much account in this direction, owing to the difference in the published measurements, and least of all indeed with the Siṇhalese; moreover, it is very unlucky that the two skulls in my possession, of which one has belonged to a young, the other to a very old man, show great individual differences.

In general the skeleton face of the Siṇhalese is narrower and longer than that of the Vẹddás. The former prove to be leptoprosopic (index 89), the latter chamæprosopic (index 83–84). Corresponding to this the palate with the Siṇhalese is more long and narrow, with the Vẹddás rather short and broad, with a prognathous jaw. In this last particular the contrast to the Siṇhalese is not so clear, since Mr. B. Davis has made no reports concerning it, and of my skulls, one is a strikingly prognathous one, although not having a long alveolar process. Moreover, with the Vẹddás occurs mesokonchy (84·6) and mesorrhiny (52), with many individual aberrations, it is true; so that with the women we have more platyrrhine, with the men more leptorrhine forms. On this point the Siṇhalese material is very unsatisfactory and quite inadequate. I will return to this latter, although pretty much all concerning it is conjecture. I add here only the comprehensive judgment of Mr. B. Davis* in respect to the type of the Ceylonese and Indian population.

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* Davis. Thesaurus Craniorum, p. 158.

"In Ceylon and the plains of India we have found the people (Veddahs as well as the more elevated races), as far as our material extends, characterised by small, narrow, long, and rather tall crania, having prominent nasal bones and well-expressed faces when we refer to the typical skulls. As soon as we ascend the southern slope of the Himalayas we meet with races of a very distinct cranial type." Whether this judgment refers to the non-Aryan tribes of India is far from clear; certainly in this generalisation it may remain an open question.

If we now draw into comparison the Tamils or Malabars, we come in contact with a much more widely diffused prejudice, although it has only found expression in recent times. Ribeyro had early the opinion that the Siŋhalese originated in a mingling of Chinese and Malabars (Gallas*). Knox† also, although he found little or no similarity between Malabars and Siŋhalese, on historical grounds considered a relationship possible. The later writers have (chiefly from outward observation) looked upon the Siŋhalese as Aryans, and sought to find a Dravidian origin for the Vęddás. Lassen‡ only, who considers the Vęddás as that portion which had remained unchanged, traces back, on linguistic grounds, the entire "people of the Cingalese" to Dekkan tribes. Sir E. Tennent§ also alludes to the existence of linguistic and religious (if we may use such an expression) affinities which seem to point to the people of the Dekkan; he assumes‖ that the Vęddás have the same relation to the Aryan Siŋhalese as the mountain tribes of India to the later Aryan immigrants. He mentions especially the Koolies in Guzerat, the Bheels in Malwa, the Puttooas in Cuttack, the Khoonds in Gundwana, the Bedas in Mysore, and the wild hordes in the mountains to the east of Bengal. Mr. Bailey[*] concurs with this view. He not only brings forward the Khonds, the Puttuwas or Juanguas, the Pulindas (in Orisa), the Meekirs (in north Cachar), &c., but extends his comparisons even to Assam, Tenasserim, and east Burmah. But his proofs also are drawn wholly from the social and religious life of these peoples. Without any special evidence is the statement of Mr. Tagore[†] that a wandering tribe known to the Ptolemies in the northern part of India, the Vaidehas, and who were later encountered by Tippoo Sahib in Mysore under the name of the Bedas, are still extant in their wild and savage condition in the Vẹddás of Ceylon. Mr. Jagor[‡] mentions that the Bedas who live in little groups in the woods of Travancore and Cochin are considered by some to be a branch of the Vẹddás of Ceylon. However interesting these suggestions may be, they still appear to me to assist very little toward the settlement of the disputed question.

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* Pridham, *l. c.*, I., p. 21.

† Knox, *l. c.*, p. 61.

‡ Lassen. Indische Alterthumskunde, I., s. 199.

§ Tennent, *l. c.*, I., p. 328.

‖ *Id.*, *l. c.*, II., p. 438.

Anthropological comparisons have until now hardly been undertaken. Neither have I the intention so far to extend the present investigation, although a variety of material for it is before me. I shall certainly make some references to such, but a full discussion of all the points to be considered would require a much more extensive work. In the first place it will be necessary to take the Tamils of Ceylon into comparison, and chiefly because the historical accounts, going backward as far as Wijayo, inform us of numerous marriages, not merely of the kings, but of their retainers, with the Malabar women, not to mention the very early invasions and settlements made in the Island by Tamil hordes.

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[*] Bailey, *l. c.*, p. 307.

[†] Transactions of the Ethnological Society of London. New series, 1863, vol. II., p. 381.

[‡] Zeitschrift für Ethnologie, 1879, Bd. XI. Verhandlungen de Berliner Anthropologischen Gesellschaft, s. 167.

In spite of the meagre reports with regard to the physical charateristics of the Támils we cannot doubt that they, likewise, are very dark, more or less black, and have long black hair. For the rest, observers lay much stress on their great strength and activity, nothing more. Hence there remains to me only the scant craniological material found in the collection of Mr. B. Davis and in my own. This is all insufficient for a final authoritative answer to the question of the ethnological relation of the Tamils to the two other Ceylonese tribes, and hence my conclusion is only to be accepted with great reservation.

All these skulls are comparatively small, and certainly no one would infer from them that they belonged to a powerful race. As already stated, the average capacity of a Tamil skull is 1,247 cub. cm., which is even less than the average of the Veddás and of the Siṇhalese. It is scarcely possible to look upon this number as the typical one for the race, in my opinion, and it is only interesting as showing that small skulls may be found among all the tribes of the Island. Still there is none among them which reaches the minimum number of the Veddás.

More important, however, is the difference in the form of the head. The Tamil skull, to judge from these specimens, is hypsimesocephalic, in fact wholly different from the Siṇhalese and the Veddá skull. Its index of breadth is 76·3, of height 76·8. Corresponding to this its transverse vertical length is greater than its sagittal circumference length. With reference also to the share of the single bones in the formation of the roof of the skull we find a considerable difference; the *squama occipitalis* is much smaller; the frontal bone, however, considerably larger than with the Siṇhalese, and still more emphatically with the Veddás. The basilar view shows plainly the extraordinary shortness of the occipital region.

I must say after this, that the skull of the Tamils, so far as recognisable from those we have under consideration, exhibits no relationship either with the Vẹddás or with the Siṇhalese. The proportions of the face may briefly be stated in the following formula: mesokonchy, mesorrhiny, mesoprosopy, prognathy, and brachystaphyly.

This positively distinguishes the Tamil face from the Siṇhalese, and brings it nearer to the Vẹddá face. But as I have already said, the almost complete identity of the nasal indices (Tamils 51, Vẹddás 50–52) does not prevent the greatest variety in the formation of the nasal bridge. Owing to the greater narrowness of the nasal bone, as well as to the prominent, slightly bent in, and comparatively sharp nature of the bridge, we perceive a certain resemblance to the Siṇhalese nose. Therefore, should we least of all be justified in representing the flat, and, toward the lower part, broad nose of the Vẹddás as a Tamil inheritance? A comparison of the profiles of the faces at a lateral view in Fig. 3, upon my three skull Tables, will show conspicuously the difference in the formation of the noses.

I might in like manner refer to Fig. 1 about the formation of the orbits, and to Fig. 5 in regard to the formation of the palate. Considering the difficulty, however, of showing these relations with perfect distinctness in a drawing, it seems to me that it will tend materially to facilitate a clear understanding of them if I show the principal lines by themselves, and of their natural size. I aim at the same time to draw attention more particularly to some hitherto rather neglected points, and to put sharply defined questions for later discussion. For, to my great regret, I am not in a position to assume any responsibility as to the ethnological significance of my lines. I can only say that I have chosen from the three series those skulls which, after mature consideration and testing, seem to offer the best guarantee that they, to some extent, positively exhibit the race type.

The wood-cuts,* for which the three skulls represented in my tables have been used, show the exterior outlines of the noses and orbits. The horizontal line, after which these skulls as well as those on my Tables have been arranged, is the so-called German horizontal line, which is drawn from the lowest point of the inferior edge of the orbit to the highest point of the superior circumference of the outer ear opening. The difference in the form of the entrance to the orbit is in this way quite as perceptible as the difference in the distance of the orbits from each other, and in the position of the edges of the orbital entrance toward the horizontal line.

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* Not reproduced—*Hon. Sec.*

The measures and indices of the orbits in question are as follows :—

| | Breadth. | Height. | Index. |
|---|---|---|---|
| Vęddá ... | 39 mm. ... | 33 mm. ... | 84·6 |
| Siŋhalese ... | 39 mm. ... | 30 mm. ... | 76·9 |
| Tamil ... | 37 mm. ... | 32 mm. ... | 86·4 |

According to this the Vęddá orbit is mesokonch, the Siŋhalese chamækonch, the Tamil hypsikonch. The difference between the first two rests solely on the lesser height, whilst both differ from the Tamils in their greater breadth.

But with this difference is associated a real divergence in the curvature and sloping off of the edges. The curve is slightest with the Siŋhalese, where the upper and under edges are almost straight, and run parallel to each other, so that as the outer edge also is very slightly convex, a flattened quadrangular face with rounded corners is the result. In the case of the Vęddá, where the orbits themselves are largest, the edges have a tolerably regular curve, so that the shape of the orbital entrance is almost round, only the diagonal from the top and inside to the bottom outside is longer because of the greater expansion about the cheek bones. Finally, with the Tamil, which exceeds the rest in height, the upper edge is but slightly convex, and the widening toward the zygomatic bone more distinct; owing to this the shape of the orbital entrance becomes an oblique oval.

To this dissimilarity is to be added the very different formation of the naso-frontal region, as may be seen from the following figures :—

| | Vẹddá.<br>mm. | | Siŋhalese.<br>mm. | | Tamil.<br>mm. |
|---|---|---|---|---|---|
| Distance of exterior orbital edges (diam. biorbitaire) ... | 95 | ... | 93 | ... | 90 |
| Distance of the inner orbital edges (diam. interorbitaire)... | 28 | ... | 19 | ... | 17 |
| Inferior breadth of *processus nasalis ossis frontis* ... | 23 | ... | 25 | ... | 21 |
| Direct length of *sutura naso frontalis* ... ... ... | 9 | ... | 13 | ... | 12 |

With the Tamil the two orbits stand nearest to each other; the root of the nose is narrow but very prominent; the *sutura naso frontalis* lies deep, taking a straight horizontal course, and the nasal process of the frontal bone, though very protuberant and bearing traces of an extremely jagged frontal suture, is stunted in its transverse development. With the Vẹddá it is exactly the reverse, and the distance of the orbits from one another greatest; the nasal process of the frontal bone, in which also a remnant of the *sutura frontalis* persists, is broad and full; the *sutura naso frontalis*, although short, pushes right up into the frontal bone, and is therefore very high, so that the *sutura maxillo frontalis* takes an oblique course on either side; the root of the nose itself is small and depressed. With the Siŋhalese the proportions are again different, but resembling nearer those of the Vẹddá; the nasal process of the frontal bone is even more broad and full, the nasal frontal suture more symmetrically curved and bulging out at the top, therefore reaching higher than with the Tamil; the distance of the orbits most considerable, the root of the nose itself broader than with the Vẹddá, but the bridge at its starting point more incurvated than with the Tamil.

The form of the aperture of the nose is with the Tamil more like that of the Siŋhalese than that of the Vẹddá. The former has a breadth of 25 mm., the latter of 24 mm., that of the Siŋhalese 26 mm. Hence the nose of the Tamil and of the Siŋhalese is platyrrhine, that of the Vẹddá mesorrhine; the indices are 53·1, 57·7, 50. In spite of this the Vęddá nose at its *epiphysis* is flatter and more depressed, the Siŋhalese and Tamil protuberant, the Tamil in fact more than the Siŋhalese. The impression of greater breadth in the root of the nose with the Siŋhalese is only an illusion, and caused by the retreating of the nasal bone into the plane of the frontal processes of the upper jaw, and hence the whole space between the corners of the eyes is flatter and more even. In reality, not only the root of the nose but the entire bony structure of the nose of the Vęddá is narrower than in that of the other skulls. With regard to this I may once more remark that the nasal indices taken in this way from the relation of the breadth of the aperture to the height of the whole nose, gives no idea of the protuberant parts of the nose. As to the aperture itself, in the case of the Vęddá it corresponds somewhat to the European type—is pear-shaped: with the other two, especially the Siŋhalese, rather triangular.

An exhibition of the Vęddá, Siŋhalese, and Tamil palates may render a further comparison of the linear boundaries possible.*

I begin here also with the figures :—

| | Length. mm. | Breadth. mm. | Index. |
|---|---|---|---|
| Vęddá | 48 | 36 | 75·0 |
| Siŋhalese | 53 | 40 | 75·4 |
| Tamil | 49 | 43 | 87·7 |

Consequently the palates of the Vęddá and of the Siŋhalese are leptostaphyline, those of the Tamil brachystaphyline. The last varies most in form ; its great breadth and shortness stand in correct relation to the form of the skull. Next to this, not in the index, but in the shape of the tooth-curve, comes the Vęddá palate, the chief distinctive feature of which is that the tooth-curve towards the back draws partly together, and has very nearly the outline of a horse-shoe. Wholly different from the Tamil, and also somewhat differing from the Vẹddá, is the Siŋhalese; with the latter the palatal plate is unusually long, and at the same time of considerable breadth, so that it is very large, but the tooth-curve does not form, as with the other two, a more symmetrical curve, but the side parts stretch out in a pretty straight line parallel to one another, whilst the region of the incisors forms a broader, flatter curve, jutting out in front. The relatively large share which the *os palatinum* has in the formation of the palatal plate with the Siŋhalese has been already pointed out. It may be further mentioned that the teeth in the Siŋhalese are most largely developed, and that especially the first molars have unusually large crowns. In the Tamils the *alveoli* of the cutting and canine teeth are very large, so also the first molar, which by far exceeds the rest in size.

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* Drawings not reproduced—*Hon. Sec.*

The facts given in respect to three of the most important regions of the skeleton face may suffice to show what great difficulties are encountered in attempting to fathom the degree of affinity existing between these three tribes. If we take, as usual, the indices as guides, we gain for each region another combination. Most closely related are :—

(1) according to the orbital index, the Vẹddá and the Tamil;

(2) according to the nasal index, the Tamil and the Siŋhalese;

(3) according to the palatal index, the Siŋhalese and the Vẹddá.

We must not forget, however, that here only one individual is taken from each tribe, and that the examinations I have cited prove that the individual selected by no means corresponded in every single particular to the average of his tribe. Thus the Tamil is platyrrhine, whilst the Tamil average was found to be mesorrhine. If this average corresponds to the typical tribal conditions, then the Tamil nose stands at least as near to the Vẹddá nose as to the Siŋhalese. And yet, as I have shown at some length, it is distinguished in all other respects as well from the Vẹddá as from the Siŋhalese nose.

Considering the small number of skulls immediately at my disposal, and the very defective or otherwise doubtful condition of some of them, I was obliged to take my pictures from such of them as gave the best indications of regular development. But I can by no means assert that in all respects they represent typical forms, or that my statements do not admit of great corrections. This the future only can decide, and my work will have fulfilled its aim if it hastens the bringing on of new and better material.

For the present I can only make the single assertion that, so far as we have a distinct view of the physical relations, *as few evidences appear of a real affinity between the Tamils and the Vęddás as between the Tamils and the Siṇhalese.*

This, however, does not decide the question as to whether there is a Dravidian element either in the Vęddás or the Siṇhalese. The present Tamils of Ceylon are in nowise typical representatives of all the tribes of Hindústán which are usually embraced in the term "Dravidas." Indeed, we find that in the further pursuit of a study of the latter so many varieties among them have come to light, that it has not yet even been proved with certainty which of the so-called Dravidian tribes are most closely related, and which are to be looked upon as the purest. But we now know that in the course of centuries "Malabars" from different regions on the coast of the peninsula of Hindústán, who made invasions and settlements in Ceylon, came, not alone from the nearer points on the coast, but also from quite northern districts. Before expressing a decided judgment all these tribes must be compared in turn.

It would not be here in place to institute a comparison of this kind, and the material at present is not sufficient. I will limit myself to calling attention to the statements of Mr. Callamand* regarding the Maravars, and the introduction of a single example. Through the mediation of Mr. F. Jagor

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* Revue d' Anthropologie, 1878, sér. II., T. I., p. 607.

I received from Dr. Burnell three skulls from the lower castes of Tanjore, therefore directly from the region corresponding to the Chóla or Solí of the Siṇhalese annals.

Of these three the one which is distinguished by a large back palatal fissure proves so aberrant in form that it must be excluded as pathological. The other two, however, are very similar, except in the certainly very different form of the palate, as we see in the main indices :—

| | | | | |
|---|---|---|---|---|
| Index of breadth | ... | 73·3 | ... | 75·4 |
| Index of height | ... | 76·1 | ... | 78·2 |
| Orbital index | ... | 85·3 | ... | 80·4 |
| Nasal index | ... | 51·0 | ... | 50·0 |
| Palatal index | ... | 73·0 | ... | 90·0 |

Strictly speaking, only the height and the indices of the nose agree well, both skulls being hypsicephalic and mesorrhine. On the other hand, we find in all the other indices differences which make it necessary to assign these skulls to other categories, according to the special relations considered. One is dolichocephalic the other mesocephalic. Which is here typical ? One is hypsikonch the other mesokonch, one leptostaphyline the other brachystaphyline. According to which shall we decide ?

To be sure we may say that in such limited comparisons chance figures often acquire a higher importance than belongs to them. The difference of the indices of breadth, for example, is just exactly as great (viz., 2·1) as the difference in the indices of height, and yet we are obliged to classify one skull as dolichocephalic and the other as mesocephalic, because accidentally the border figure between the two classifications is 75, and this is just between the two indices 73·3 and 75·4. On the other hand, the equally great difference in the indices of height does not prevent both skulls being assigned to the same category, viz., the hypsicephalic, since the number 76·1 as well as 78·2 is within the recognised extreme. Which of these figures is more, which less accidental I am unable to decide, and the calculation of an average from the single cases would not aid in the decision.

Nevertheless, I may say that the Tanjore skulls approach comparatively near the Tamils of Ceylon. In these I found also no small individual differences, and in the index of breadth, in fact, exactly the same, for the latter in the Tamil skulls amounted to 72, 74·8, and 75·3. But for the rest so many analogies present themselves between the two groups that in spite of the aberrant pathological skulls of Tanjore I consider it very probable that the people of Tanjore and the present Tamils of Ceylon are connected together.

But the kingdom of Chóli, or Solí, was even in ancient times a civilised state. Among its near neighbours early appeared the wild mountain tribes of the Nilagiris, remnants of which exist even to this day: as, for instance, the Kurumbas (Curumbars, Kurubas). They were subjugated by the kings of Chóla, and are found at present only in sparse numbers.* For a series of measurements and other investigations regarding these people we have to thank Mr. F. Jagor,† and also for some account of the half-savage Naya-Kurumbas living in the forests. Of the latter, Mr. Jagor has brought with him a skeleton, which is in the possession of the Berlin Anthropological Society. It belonged to a woman, and is remarkable for its extraordinary smallness and delicacy. It is 1,310 mm. in height, and of the skull we have the following indices :—

| | |
|---|---|
| Index of breadth ... ... | 74·6 |
| Index of height ... ... | 74·6 |
| Index of face ... ... | 81·8 |
| Index of orbits ... ... | 91·1 |
| Index of nose ... ... | 63·8 |
| Index of palate ... ... | 64·0 |

It is therefore an orthodolichocephalic chamæprosopic skull. Its capacity amounts to only 960 cub. cm., precisely the same nannocephalic measure which Mr. Flower gave of the smallest Vęddá skull from Hunter's Museum, and which he declares to be altogether the smallest human skull in this collection. In fact, this skeleton challenges comparison with the Vẹddás. The skull measurements show great similarity, whilst the Tamils from Ceylon as well as from Tánjore, especially in the index of height, vary essentially. The form of the face is different from both, as well from the Vẹddás as from the Tamils, but not different enough from the Vẹddás to justify an ethnological separation.

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* James Wilkinson Breeks. An Account of the Primitive Tribes and Monuments of the Nilagiris. London, 1873, p. 55.

† Zeitschrift für Ethnologie, 1879, Bd. XI., s. 54 *et. seq.*

The measurements of Mr. Jagor among the living showed in the main similar proportions, although considerable single deviations appear which it is now impossible to account for. He found the Naya-Kurumbas throughout small in stature, and although among them were some very young individuals, the elder ones, especially the women, proved to have even smaller figures. I put the numbers briefly together :—

| | Height of body. mm. | Skull index. |
|---|---|---|
| A man of 19 years | 1,435 | 69·4 |
| A girl of 15 years | 1,402 | 71·0 |
| A woman of 25 years | 1,345 | — |
| A woman of 45 years | 1,305 | 82·4 |
| Average of the women | 1,350 | — |

The result in the case of the few wild Kurumbas is :—

| | Height of body. mm. | Skull index. |
|---|---|---|
| A man of 18 years | 1,492 | 72·6 |
| A man of 23 years | 1,515 | 73·1 |
| A man of 27 years | 1,529 | 80·2 |
| A man of 30 years | 1,523 | 69·8 |
| A man of 50 years | 1,589 | — |
| Average of the men | 1,529 | — |
| A woman of 22 years | 1,470 | — |
| A woman of 50 years | 1,410 | — |
| Average of the women | 1,440 | — |

How far the difference in bodily height is universal we cannot judge. At any rate, the women of both tribes are not only smaller, but absolutely small. But the Kurumbas altogether must be called small. Mr. Ross King,* in his description of the aboriginal tribes of the Nilagiris, points out the Kurumbas as especially stunted creatures, "low in stature, they are also ill-made. They are among the most debased types of mankind." The indices of the head are, in both of the columns just given, dolichocephalic, and indeed to a very pronounced degree. The fact that we have in each column a brachycephalic head is perhaps to be ascribed to the difficulty in taking the measures of the living.

I do not enter any further into these investigations. For the present I only wished to show that the physical condition of the Tamils, including even those of the Coromandel coast, is not sufficient to represent perfectly the Dravidian type. Close beside them in the mountains of Hindústán we come upon other Dravidas who, to all appearance, are essentially different. Therefore, if one will search out the connection of the Vęddás, and perhaps of the Siṇhalese themselves, with Dravidian India, it would be advisable to go beyond the inhabitants of the coast and bring the mountain tribes into comparison.

But even here the researches will not end, for according to all probability the present mountain tribes are not the real aborigines of Hindústán. In the tradition, together with the Kurumbas, the Vedars are called the oldest inhabitants of Tondamandalam (Madras); and of them, it seems, it was said: "There were then no forts, only huts; no kings, no religion, no civilisation, no books; men were naked savages; no marriage institutions."† I will lay no weight on the name of the Vedars, which probably likewise signifies "hunters," although the mention of such aborigines is certainly noticeable. Further, in the oldest Indian epic, the Rámáyana, we are told of the fights of Vishṇu with fabulous Asurs, who we must imagine to have been the aborigines of Hindústán and Ceylon. Ráma himself, who is said to have come from Oude, makes war upon Ráwaṇá, king of Ceylon (Lańká), champion of the Yakkho and Rákshasas worship, and conquers him. Curiously enough a tradition has been preserved among the Hayas (Vayas, Haius) in Nepál that at the time when Ráwaṇá was slain they immigrated from Ceylon to the Dekkan, and later from thence to Samroanghar, and finally reached the mountains, which are their present home.* The Varalis, who inhabit the mountains of Konkan,† tell the same tale of their tribe. All these traditions are of course of no positive value for the diagnosis of the different tribes, but they must warn us not to decide our investigations among the aboriginal races of India and Ceylon simply on the ground of some crude linguistic indications, or the physical characteristics of a few better known tribes. All the same, whether the earliest inhabitants of Ceylon immigrated in boats over the small extent of sea which separates the Island from the mainland, or whether, as has been so often conjectured, and is rendered highly probable by the fauna of Ceylon, the Island was once a part of the continent, and as such inhabited by the same tribes, we cannot avoid the conviction that they stand in a close affinity to the aborigines of India.

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* Journal of Anthropology. London, 1870–71, p. 46.

† Breeks, *l. c.*, p. 55. Prichard, *l. c.*, IV., p. 182.

Whether these were proto-Dravidian or even pre-Dravidian tribes we cannot with certainty decide at present.

The traditions, however far back they may go, with regard to this give very little light. Mr. Zimmer‡ has lately compiled from the books of the Vedas comprehensive accounts of the condition of the Indian people in past ages, but they hardly afford sufficient foothold to enable us to judge of the Aryan condition. When the light-skinned Aryans from the Punjáb invaded the land, later called Hindústán, they found it already in the possession of numerous tribes of "dark-skinned" people. In the Vedas these same tribes are designated by the generic name of *Dasyu* or *Dasa*. A greater part of them, in proportion as the conquerors penetrated farther into the valley of the Ganges, were forced back on both sides to the mountains, northward into the Himálaya and southward into the Vindhya; those who remained behind were adopted as Sudras, thus becoming a part of the Aryan organisation. Hence nothing stands in the way of the assumption that the mountaineers in general belong to the aboriginal tribes. But neither does anything compel us to consider all these tribes of the Dasyu as homopholic. Indeed, one has recently begun to separate the Dravidian from the Kolarian* tribes, chiefly on account of language. Should we, in the face of such an important linguistic contrast, assume a physical similarity? In this matter the French anthropologists have advanced most audaciously. M. Rousselet† speaks most positively of an immigration of Thibetan tribes of the yellow race from the east, and another of Turanians from the west, before the Aryan invasion; but he assumes, as anterior to both, a population of Negritos. To the admixture of the latter with yellow tribes he first of all ascribes the origin of the proto-Dravidians, counting among these the Malers, the Konds, perhaps the Gonds, and only when fresh troops of invaders had again mixed with the proto-Dravidians, arose, in his opinion, the Dravidas or Tamils. They brought the snake-worship (Nagas) with them. On the other hand, from the immigration of the Turanians arose in the plains the Jats, in the mountains the Bhils, Minas, and Mhairs. He regards as the last remains of the primitive black population the scattered remnants of a small black people upon the high plateaus of the Amarkantak, who have become known under the names of Djangals, Puttuas, and Juangas. Curiously enough these are precisely such tribes as Sir E. Tennent and Mr. Bailey had already brought into comparison with the Veddás. But with regard to the Juangas (Dschuangs), Colonel Dalton states that they belong to the Kolarians; that their hair is rough, curly, and of a reddish brown colour, their cheek-bones prominent, faces flat, noses depressed, brows vertical but low. He gives the average height of the men as below 5 ft. and that of the women as about 4 ft. 8 in.* This description contains quite as many Mongolian as Negritian characteristics.

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* Dalton. Ethnological Description of Bengal, re-published by Oscar Flex. Zeitschrift für Ethnologie, 1874, bd. VI., s.

† Louis Rousselet. Tableau des Races de l'Inde Centrale. Révue d'Anthropologie. Paris, 1873, t. II., p. 69.

‡ Heinrich Zimmer. Altindisches Leben. Die cültür der vedischen Arier. Berlin, 1879, s. 100 *et seq.*

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* Dalton. Zeitschrift für Ethnologie, a. a. O. S. 252.

† Rousselet, *l. c.*, pp. 55, 279, pl. III.

If I have many doubts, therefore, about admitting the distinctions of Mr. Rousselet, especially with regard to the assumption of a veritable Negrito race as the aboriginal race of India, I yet in nowise oppose the idea that the tribes of "black-skins" which the Aryans found established in the valley of the Ganges were mixed. How much Mongolian, Turanian, or Negrito blood flowed in their veins must remain for the present undecided. But it is certainly not improbable that a part only of the Dasyu were Dravidians, and that, even before the proto-Dravidas of Mr. Rousselet, pre-Dravidian tribes inhabited the land. Neither the Mongols nor the Turanians satisfactorily explain the stunted growth of the tribes of "black-skins," to whom even Pliny† alludes as "the pigmies inhabiting the mountains in the country of Prasiæ." All the information we have of them is unfortunately so imperfect as to permit of its being turned to account for every sort of opinion.

The Messrs. de Qutrefages‡ and Hamy have collected accounts of the Negritos in India, from which they conclude definitely that genuine Negritos are still living in various parts of the country. I cannot esteem the evidence sufficient, although I will not deny that the question is open to discussion. I will give only one example as ground for my misgivings, which is not, however, taken from the Indians, but from genuine Negritos from the neighbourhood.

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* The young women wear even now nothing but green leaves held together by a girdle. In so far they resemble the Wanni Veddás. But according to Mr. F. Jagor the women of the Korogars, some of the Gond groups, and the Chauchra in Hindústán, likewise wear no covering but leaves.

† Plinius. Nat. Hist., lib. VI., c. 22.

‡ A. de Quatrefages et Ernest T. Hamy. Crania Ethnica, V., p. 189.

The so-called Negrito (or Mincopie) race which inhabits the neighbouring provinces to the east, and principally several clusters of islands and parts of Malacca (though they are in fact only scattered members of the tribe), show unquestionably by their dark complexion as well as smallness of frame, and particularly of the head, a striking approach to the Vęddás and Kurumbas. As next to them in point of territory we must mention their near neighbours the "little blacks" who dwell in the Andaman Islands. In truth, Mr. Hartshorne* points to certain analogies between Vęddás and Andamanese. But his proofs refer exclusively to single customs and peculiarities,—for instance, to the use of the bow and arrow, to their inability to count,—but nowhere rest upon physical grounds. It cannot be denied, however, that the Andamanese, through previously cited characteristics, are physically pretty closely related to the Vęddás. In the measurements of Mr. F. Jagor† from the living I calculate the average height of the Andamanese :—

| | mm. |
|---|---|
| 17 males at ... ... | 1,488 |
| 10 females at ... ... | 1,416 |
| 27 Andamanese at ... | 1,462 |

Among these the minimum is 1,350 with a man 20 years old, and 1,320 mm. with a woman of 24 ; the maximum 1,636 with a man 40 years old, and 1,504 mm. with a woman

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* Journal of the Anthropological Institute of Great Britain and Ireland, 1878, vol. VII., p. 468.

† Zeitschrift für Ethnologie, 1876, bd. VII. Verhandl. der Anthropol. Gesellsch., s. 262. Journ. Anthrop. Inst., *l. c.*, p. 437.

20 years old. These are proportions in part even lower than the measure found for the Vęddás, on the whole, however, coming to about the same.

As regards the capacity of the skull, it is on the average very small. I can state that according to measurements of Andamanese skulls, for which I am indebted to the kindness of Messrs. Macnamara and Man, they reach and even exceed the measure of nannocephaly which the Vęddás and Kurumbas present. One of my skulls has a capacity of only 940 cub. cm., another shows 970, a third 1,050.

As great as the similarity in these figures is the difference in the form of the skulls. The Andamanese, as well as the Negritos generally, are in reality brachycephalic, and this one circumstance distinguishes them definitely from all the Ceylon races. If we add to this that their hair grows in spiral coils, and is to be classed with the woolly hair of the genuine negro, then every possibility disappears of a union with the Vęddás, unless we assume that climatic influences have specially affected the hair. The complexion also presents considerable variation. Since most reporters call it pure black with the Andamanese, the Vęddás are generally described as lighter, and even by the very trustworthy Davy as resembling the Siŋhalese.

Even less analogy is found between Vęddás and Australians. We may certainly point out that the hair and even the beard is somewhat like that of the Veddás; but one glance at the skull, and still more at the skeleton, of the Australian convinces us that here a great and unmistakable contrast exists. In spite of this Mr. Topinard* has recently emphasised the relationship of the Australians as well to the Vęddás as to the Bhíls, Gonds, Khonds, Mundas, Kurumbas, &c. I call attention also in this connection to the sufficient number of reasons to the contrary adduced by his countryman, Mr. Callamand.†

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* Paul Topinard. L'Anthropologie. Paris, 1877, p. 521.

† Callamand, *l. c.*, p. 624.

Very much more complicated is the question whether Malay elements were not infused into the aboriginal population of Ceylon, which from the peculiar rigging of their boats has been concluded, not without substantial grounds. The fact that the Malays have extended their settlements much further, even as far as Madagascar, suggests the idea that they may have established upon Ceylon a kind of midway station. There are, however, no obvious physical indications of such a relationship, and I would therefore enter into no further discussion of this possibility, the less so since the generally assumed connection of the Malays with the ancient inhabitants of India impedes such investigation very greatly. The single recent statement of a physical resemblance between Siṇhalese and Malays, which I find is by an American missionary in China, Mr. Williams,* who observed in the former "a Malay expression of countenance."

From the foregoing discussion we assume as proved :—

(1.) *That manifold resemblances exist between the Vẹddás and the Siṇhalese, and that the origin of the Siṇhalese race from a mixture of Vẹddás and immigrants from India possesses great probability, as well upon historical as also upon anthropological grounds.*

(2.) *That the Vẹddás as well as the Siṇhalese in the main features are distinguished from the Ceylon Tamils, and equally from those of Tanjore (Chóla).*

(3.) *That, on the other hand, among the remnants of the old Dravidian or perhaps pré-Dravidian tribes of Hindústán we find even to-day evidence of analogies with the Vẹddás.*

Have the Vẹddás remained in the condition of the proto-Dravidians, or possibly pre-Dravidians, or have they in their isolation sunk to a lower state ? In other words, are they ethnologically to be turned to account in order to paint anew the picture of this primitive period ?

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* United States Exploring Expedition during the years 1838-42. Vol. IX. Pickering. The Races of Man. Philadelphia, 1848, p. 136.

In various places I have earlier demonstrated why it is not to be assumed that the Vẹddás have ever passed through a state of higher civilisation. If in spite of the reasons for such a conception, which to me seem conclusive, it may nevertheless be assumed that, owing to unfavourable outward circumstances, they have by degrees retrograded physically, and that their present low intellectual condition is the result of this physical deterioration, we should then be forced to represent them as a pathological tribe. The smallness and delicacy of their bones, above all the tiny size of their skulls, and, as a necessary result, the inferior capacity of their brains, might indeed suggest the hypothesis that they are a kind of cretin or microcephyle. Unquestionably the brain of the Vẹddá must be very small; direct and definite statements of how small we have not, and computation is very uncertain. Herr L. W. von Bischoff* has called attention in detail to the inexactness of the proposed method by which the weight of the brain is computed from the capacity of the skull. We can, however, by this method arrive at an approximate estimate, and I subjoin a few such calculations. The first is according to the method of Mr. Barnard Davis, who for the meininges and the vessels deducts 15 per cent. from the figures for the capacity of the skull, and claims the remainder as being the weight of the brain. The second is according to the direction of Herr von Bischoff, who ascertained that the capacity of the dry skulls was with males 11·9, with females about 8·8 per cent. cub. cm. larger than the weight of the brains expressed in grams. The weight of brain, therefore, would be with the Vẹddás, according to—

| Davis's method. | | Bischoff's method. |
|---|---|---|
| Males, 1,136 grams | ... ... | 1,177 grams |
| Females, 1,021 grams | ... ... | 1,105 grams |

These numbers, however inexact they may be, still indicate a very striking contrast to the proportions of the brain in cultured races ; indeed, the figures for the nannocephalic girl are so small that we have every reason to inquire whether these can be physiological relations. If we add to this the apparently very small capacity of the Vęddás for mental development, the almost entire absence of all ideal forms of thought, the inability to count, and still more to calculate, the want of any sense of colour, the question suggests itself whether this is not mikrocephaly in the pathological sense ? We can distinctly deny this suggestion. The small Vęddá skull is as little to be considered microcephalic, in the technical sense, as the intellect of the Vęddás is to be likened to the mental condition of microcephyles. The individuality of the Vęddás is psychically fully developed. So far as their needs demand they have matured their capacities, and are able to take care of themselves and their children. They establish families, defend their estates (not very definitely limited to be sure), obtain for themselves, partly by great effort and cunning, the necessary food, and even associate, so far as unavoidable, with neighbours and strangers in a free way and as self-determined men. Enough ; they are distinguished in all the main features from actual microcephyles.

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* Theodor L. W. von Bischoff. Das Hirngewicht des Menschen, München, 1880, v. 66.

Mr. Bailey* testifies expressly that madness and idiocy are rare among the Vęddás, especially the latter. He says it is true they have the notion, that when one curses another madness overtakes the one cursed—a notion which prevails also among the Siŋhalese, who designate cursing as *katawaha* (" bad mouth," or " poison from the lips "). But insanity is nevertheless uncommon among them. This testimony is the more worthy of note since Mr. Bailey suggests the idea that, as the result of intermarriages with blood relations, beside a stunted body, diseases of the brain, idiocy, and epilepsy might be expected. But he finds nothing of the kind, and satisfies himself by imputing to the cause mentioned the lack of numerous descendants and dying out of the race, an explanation which, considering the manifold unfavourable conditions under which the tribe live, may at least in this sweeping sense be open to question.

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* Bailey, *l. c.*, p. 295.

Real microcephaly in the pathological sense is found among the tribes of India. One of the most noticeable examples we know was communicated to the Berlin Anthropoligal Society by Dr. J. Wilson.* It concerns a sect of Fakírs, who administer the service in the temple of Shadowla, in the Punjáb, and who belong to the Suní Muhammadans; on account of their abnormal heads they were called Chuas or Chuhas (" rat-heads "). Of one of these Mr. Wilson has given us some measurements, which, though not showing exactly how they were taken, at any rate indicate much smaller proportions than are to be found among the Vẹddás. According to him, with one male Chua :—

| | | mm. |
|---|---|---|
| The diagonal circumference of the head (measured before the ears, across occiput) ... | 19 inches = | 482 |
| The horizontal circumference (across occiput, ears, and frontal cavity) ... ... | 17 inches = | 431 |
| The vertical circumference (right across from one ear opening to the other) ... ... | 8 inches = | 203 |

If we compare these figures with those of the Vẹddás the difference will instantly be clear. With the Chua the size diagonally amounts to less than the size horizontally of the Vẹddá skull No. 1, although the latter is not measured across the frontal cavities, but above them, and of course without any covering of flesh. Although Dr. Johnston asserts the impotence of these people, the sect has still, since the 16th century, continued to perpetuate itself in both sexes, and at some periods so vigorously that their number in the latter half of the 17th century reached a hundred heads. The temple is secretly visited by women, who, because of their sterility, pass a night there, and consecrate their first-born, in advance, to the temple service. In the morning "they find a Chua at their side who is supposed to promote conception and beget Chuas." It will indeed be allowable to make another interpretation, and assume direct agency, wherein less impotent individuals than Dr. Johnston saw are employed; however it may be, this example very well illustrates the distinction between microcephaly and nannocephaly.

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* Zeitschrift für Ethnologie. 1879. bd. XI. Verhandl. der Anthropol. Gesellsch., s. 237. 1880, bd. XII., Verhand., s. 12.

It may, therefore, without hesitation, be admitted that the impaired bodily and mental development of the Vẹddás is not owing to a really morbid condition, which as such might be hereditary, but rather to be regarded as a race-peculiarity. This, however, by no means excludes the possibility that favourable outward circumstances, especially better food, might produce a more complete development, and the body become larger and stronger, the skull and brain formation more perfect. In fact such cases appear among the Vẹddás, as is proved by examples previously given. A man of 1,638 mm. in height far exceeds the average, and though the one skull in the Davis collection which has a capacity of 1,614 cub. cm. may be considered as a kind of abnormity, there is still the other out of the collection in the College of Surgeons of 1,420 cub. cm., which (supposing it to be genuine) is a very noteworthy specimen.

It might follow from this that the Siṇhalese are civilised Vẹddás, who simply owe the superiority of their physical development to their better life. The Island of Ceylon had of old the reputation of affording the most favourable conditions for the existence of men, and was celebrated for the longevity of its inhabitants. "In Taprobanem," Palladius* writes, "ubi gens est Macrobiorum, namque eximia coeli temperie...ad ætatem 150 annorum senes durant." Saint

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* Palladius, *l. c.*, p. 3; *cf.* Plinius, Nat. Historia, lib. VI., c. 24. "Vitam hominum centum annis modicam."

Ambrosius even translates the Greek μακρόβιαι, "Beati." However, climatic and outward circumstances favour the Vẹddás too, and if in their peculiar conditions of life they in some degree approach the Roḍiyas, still, as already mentioned, the latter have nowhere sunk to a physical degradation compared with that of the Vẹddás. But no one will deny that with good care both might attain to an incomparably more complete bodily development.*

In spite of this possibility of a more perfect growth, the Vẹddá race is still in reality, as in ancient days, of small stature—in fact one may even count it among the smallest of the living human tribes, and in a not very strict sense speak of it as a tribe of dwarfs. As a further corroboration of this, such tribes were scattered all over India. I have already referred to the Naya-Kurumbas. But beside these, people of small stature and little heads are not uncommon. Even the Siṇhalese and Tamils of Ceylon have already afforded us examples of this. Herr von Bischoff† speaks of the brain of an Indian from Bukkur of 1,660 mm. in height, which weighed only 973 grams : he quotes at the same time an observation of Peacock's, who found in a native of mixed origin from Bombay a brain of 1,006 grams, whilst Mr. Clapham ascertains the weight of brain of a Bengalese to be 1,531 grams. In the collection of the Berlin Anthropological Society is the skull of a Poleyar, with a capacity of only 1,040 cub. cm.; that of a young native of further India, belonging to the caste of the oil merchants, having a capacity of 1,150, and his mother's of 1,100 cub. cm. Of the skulls from Tanjore which I mentioned one has 1,200 the other 1,255 cub. cm.

The nannocephaly of the Vẹddás, however little pathological it may be, compels us in nowise to go beyond the province of Indian ethnology to seek out analogies. Possibly

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* Davy (*l. c.*, p. 107) states that among the Siṇhalese there are more men than women ; in the fishing towns, where the food is better, we find, however, as in Europe, that the case is exactly the reverse.

† Von Bischoff, a. a. O. S. 83.

India in ancient times was inhabited by tribes who bore a close relationship to these. With as little propriety as the present Hindús can be said to have sprung, and progressively developed from these more or less dwarfish aborigines, just so little does such a kind of explanation suit the connection of the Vęddás with the Siŋhalese. As they have not descended from the Siŋhalese by regressive degeneration, neither surely have they been transformed by progessive evolution into Siŋhalese. That no such simple affinity exists is proved chiefly by the difference in the form of the face, to which all observers testify.

In truth, it was just the form of the face which caused all the earlier travellers to associate the Siŋhalese with the Europeans. Even Knox, as I have already mentioned, was of the opinion that no people in the world were so exactly like the Siŋhalese as the people of Europe. Cordiner asserts this quite as distinctly, calling attention particularly to the features, which means the face. If so fine an observer as John Davy, instead of this, says the Siŋhalese are wholly Indian, we can only conclude that all these designations point to the common Aryan character of the face. With Davy this is the less to be doubted since he speaks explicitly of the "Asiatic" form of the Siŋhalese skull (that is, of the capsule of the skull); when, directly to the contrary, almost all observers ascribe to the Vęddá face a foreign and very frequently Dravidian type, it becomes clear that genealogical investigation must make the face a main object of study. If we now go back to the history there can be no doubt that *the Siŋhalese face is an importation from the Aryan province of the Indian continent.* The Rámáyana, as well as the Wijayo legend, affords direct confirmation of this. The latter, however, conveys at the same time an earnest warning not to be too one-sided in this opinion, for it speaks distinctly of an importation of Tamil women from "Mabar," from whom the king himself and his followers took wives.

If my view be correct *that the Vẹddás are a pure blooded, the Siṇhalese a mixed race*, we may then leave the question out of consideration as to how far Ceylonese intervention, especially soil, food, and climate, has operated to determine the formation of the body. I wish only to touch briefly upon a few facts, the knowledge of which is not without significance in regard to this question. Even in the old document ascribed to Palladius, the sheep upon Taprobane are spoken of: "Oves illis crinitæ omnesque absque lana, lac suppeditant ubertim, latis caudis conspiciendæ (*πλατείας ἔχοντα οὐράς*).

Sir E. Tennent,[*] nearly two thousand years later, made the same observation in Jaffna; the sheep of the place had long hair, like goats, instead of wool. A similar influence of climate upon the hairy covering of the sheep is also testified of other places. It is asserted[†] that the native cats of Ceylon have an inferior appearance; they are said to be small, with thick close-clinging hair, little heads, retreating foreheads, but great pointed ears.[‡] Any one disposed to assume a like influence of climate upon men might conclude that human beings also, especially the aborigines, who have dwelt longest upon the Island, have undergone a like change: for example, that the hair was originally woolly, the head and entire body larger. Then might approaches be sought to woolly-haired blacks, to Andamanese and Negritos, to Melanesians and even Africans. Before admitting such great alterations, however, the facts must be assured. The story of the native cats deserves a more strict inquiry; it rests at present upon the solitary testimony of a botanist (Mr. Thwaites). The metamorphosis of the sheep, however, seems more firmly established, as it is supported by the authority of two wholly independent witnesses, separated from one another by quite a long interval of time; but it is confined, according to Sir E. Tennent, to a comparatively small district in the extreme north. Hence it appears to me we should hesitate before making an application of these experiences, gathered from the history of domesticated animals, to the savage inhabitants of Ceylon; at any rate until it is proved that the latter actually possessed in earlier times different physical characteristics. The present state of the hair plainly corresponds to the ἀπλότριχα of Palladius, and must therefore have been just as it now is for at least fifteen hundred years.

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[*] Tennent, *l. c*, II., p. 531. "The finest sheep in Ceylon are reared upon the dry plains which overlie the limestone and coral rock, on the northern and western coasts. These sheep, instead of being coated with wool, are covered with long hair, resembling that of goats, and the horny callosities that defend their knees, and which arise from their habit of kneeling down to crop the short herbage, serve to distinguish the Jaffna flocks from those of the other portions of the Island." I do not find it said that these sheep have fat tails.

[†] Charles Darwin. The Variation of Animals and Plants in the State of Domestication. Translated from the English by V. Carus. Stuttgart, 1868, vol. I., p. 122; vol. II., p. 339.

[‡] *Id.*, vol. I., p. 57.

It is very certain that if we would pursue the search for the origin of the Vęddás genealogically we must first turn our investigations to the savage, or half-savage tribes of India. This once clearly settled, room enough will still remain for conjectural anthropology. Even now speculation has gone pretty far. Mr. Hyde Clarke* brings the Kolarian and other further Indian tribes in connection with the African negroes; Col. Kincaid† places the Bhils with the Mongols; and Mr. Keane‡ strikes the Malays wholly out of the series of independent races, and believes the Caucasians to have penetrated in pre-historic ages not merely to further India, but even so far as Polynesia. It may be of service that such questions should be seasonably presented, especially at a time when the dying out of the savage races is imminent, and admonishes us to hasten the investigation. But after the questions have awakened interest, the warning must be reiterated not to draw any definite conclusions until a greater amount of facts have been collected. First of all then, great stress must be laid on the importance of enlarging by every possible effort the ethnology of the Indians, in order to be able to investigate radically the tribe of "black-skins." Since a part of the Dasyu were transferred to the Sudras, and consequeutly included in the caste system of the Hindús, as the Veḍdás in that of the Siŋhalese, it is not even possible to bring to a conclusion the physical anthropology of the Hindús and the Siŋhalese until we have resolved the evidently very composite group of the Dasyu into its separate members. One such member is plainly the tribe of the Veḍdás. Their natural isolation upon an island has perhaps tended to preserve in them, rather than in related races upon the continent, their peculiar character, and made them an object by which to test the admissibility of the theories concerning the origin of the black Indians.

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* Journal of the Anthropological Institute of Great Britain and Ireland, 1878, vol. VIII., p. 49.

† *Id.*, 1880, vol. IX., p. 406.

‡ *Id.*, 1880, vol. IX., p. 258.

May the zeal of the observer know no flagging, that before the utter extinction of this already much depleted race, the language and customs, the physical and mental constitution, of the Veḍdás, may be in all particulars firmly established.

## TABLES OF MEASUREMENTS.

### I.—SKULL AND FACE MEASUREMENTS.

| | | VEDDA'S. | | | SINHALESE. | | | TAMILS. | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 ♀ | 4 ♀ | 5 ♂ | 1 ♂ | 2 ♂ | ? 3 ♀ | 1 ♂ | 2 ♂ | 3 ♂ |
| Capacity ... ... | cub. cm. | 1,250 | 1,025 | 1,360 | 1,110 | 1,200 | 1,250 | 1,155 | 1,260 | 1,200 |
| Greatest length ... ... | mm. | 177 | 165 | 185 | 178 | 181 | 172 | 175 | 179 | 170 |
| Greatest breadth ... ... | ,, | 125·5 | 133 | 135 | 127 | 127 | 132 | 126 | 134 | 128 |
| | | Ps.° | | | Ps. | Pi. | Pi. | P. | P. | P. |
| Vertical height ... ... | ,, | 129 | 121 | 137 | 129 | 132·5 | 133 | 139 | 132 | 137·5 |
| Auricular, meatus audit. to vortex ... | ,, | 107 | 104 | 120 | 113 | 106 | 116 | 116 | 113 | 117 |
| Horizontal circumference ... | ,, | 485 | 465 | 508 | 482 | 493 | 472 | 477 | 490 | 473 |
| Trans. vertical circumference ... | ,, | 283 | 286 | 300 | 298 | 293 | 305 | 305 | 308 | 305 |
| Sagittal circumference, frontal bone ... | ,, | 120 | 115 | 134 | 119 | 124 | 121 | 117 | 134 | 130 |
| Length of sagittal suture ... | ,, | 115 | 108 | 140 | 125 | 130 | 125 | 132 | 120 | 122 |
| Sagittal circumference, squama occipital | ,, | 110 | 109 | 114 | 110 | 111 | 103 | 110 | 97 | 100 |
| Whole sagittal arch ... ... | ,, | 345 | 332 | 388 | 354 | 365 | 349 | 359 | 351 | 352 |
| Inferior frontal diameter ... | ,, | 95 | 91 | 93 | 93 | 92 | 88 | 88 | 92 | 88 |
| Temporal diameter ... ... | ,, | 107·5 | 110 | 117 | 93 | 103 | 102 | 108 | 115 | 104 |
| Parietal diameter, *tubera* ... | ,, | 119 | 123 | 120 | 122 | 116 | 123 | 115 | 120 | 122 |
| Occipital diameter ... ... | ,, | 102 | 100 | 99 | 103 | 101·5 | 103 | 101 | 103 | 95 |
| Mastoideal diameter, end ... | ,, | 96 | 94 | 103 | 96 | 98 | 93 | 105 | 95 | 93 |
| Mastoideal diameter, *basis* ... | ,, | 110 | 111·5 | 122 | 115 | 115 | 111 | 120 | 119 | 112 |
| Auricular diameter ... ... | ,, | 100 | 108 | 108 | 97 | 103 | 95 | 106 | 115 | 106 |
| Horizontal length of occiput ... | ,, | 50 | 46 | 60? | 53 | 54 | 52 | 48 | 42 | 46 |
| Distance of nose-root from *foramen magnum* | ,, | 92 | 91 | 90 | 99 | 97 | 92 | 100 | 97 | 95 |
| Distance of root of the nose from the ear opening | ,, | 96 | 94·5 | 99 | 102 | 101 | 95 | 101 | 104 | 99 |
| Distance of nasal spine from *foramen magnum* | ,, | 81 | — | — | 96 | 86 | 83 | 91 | 87 | 88 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Distance of nasal spine from ear opening | „ | 95 | — | — | 105 | 101 | 93 | 102 | 103 | 101 |
| Distance of alveolar edge from *foramen magnum* | „ | 86 | — | — | 105 | 82 ! | 83 | 90 | 92 | 93 |
| Distance of alveolar edge from ear opening | „ | 100 | — | — | 100 | 101 ! | 96 | 107 | 111 | 107 |
| Distance of chin from *foramen magnum* ... | „ | 114 | — | — | — | — | — | — | — | — |
| Distance of chin from ear opening ... | „ | 92·5 | — | — | — | — | — | — | — | — |
| Height of face, A (from nasal root to chin) | „ | 101·5 | — | — | — | — | — | — | — | — |
| Height of face, B (from nasal root to alveolar edge) | „ | 61 | — | — | 59 | 58 ! | 151 | 62 | 66 | 63 |
| Breadth of face, A (jugal) ... | „ | 122 | — | — | 112 | 120 | 07 | 120 | — | 118 |
| Breadth of face, B (*sut. zyg. max.*) ... | „ | 87 | — | — | 97·5 | 87 | 83 | 90 | — | 101 |
| Orbits, height ... ... | „ | 33 | — | — | 30 | 34 | 30 | 32 | 35 | 32 |
| Orbits, breadth ... ... | „ | 39 | — | — | 39 | 41 | 36 | 38 | 42 | 37 |
| Nasal height ... ... | „ | 48 | — | — | 45 | 51 | 36 | 45 | 45 | 47 |
| Nasal breadth, aperture ... | „ | 24 | — | — | 26 | 23·5 | 20 | 22 | 23 | 25 |
| Palate, length ... ... | „ | 48 | — | — | 53 | 45 ! | 38 | 49 | 48 ! | 49 |
| Palate, breadth ... ... | „ | 36 | — | — | 40 | 33 ! | 33 | 36 | 36 ! | 43 |
| Distance maxillary angle ... | „ | 85 | — | — | — | — | — | — | — | — |
| Distance maxillary joint ... | „ | — | — | — | 85 | 87 | 81 | 90 | 92 | 89 |
| Facial angle ... ... | degrees | 82 | — | — | 75 | 75 | 76 | 76 | 76 | 75 |

## II.—INDICES COMPUTED.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Length to breadth index ... | mm. | 70·9 | 80·6 | 73 | 71·3 | 70·2 | 76 7 | 72 | 74·8 | 75·3 |
| Length to height index ... ... | „ | 72·9 | 73·3 | 74·1 | 72·5 | 73·2 | 77·3 | 79·4 | 73·7 | 80.9 |
| Breadth to height index ... ... | „ | 103·5 | 90·9 | 101·4 | 101·5 | 104·3 | 100·7 | 110·3 | 98 5 | 107·4 |
| Auricular index ... ... | „ | 60·4 | 63 | 64·9 | 63·5 | 58·5 | 67·4 | 66·3 | 63·1 | 68·8 |
| Middle facial index ... ... | „ | 50 | — | — | 52 6 | — | 47·6 | 51·6 | — | 53·4 |
| Orbital index ... ... | „ | 84·6 | — | — | 76·9 | 82·9 | 83·3 | 84·4 | 83·3 | 86·4 |
| Nasal index ... ... | „ | 50 | — | — | 57·7 | 46 | 55·5 | 48·8 | 51·1 | 53·1 |
| Palatal index ... ... | „ | 75 | — | — | 75·4 | — | 86·8 | 90 | — | 87·7 |

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* The mark P. signifies that the greatest breadth was taken at the parietal ; Ps. at the *tubera* (upper parts) ; Pi. at the lower parts.

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## VOLUME IX.

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**"The design of the Society is to institute and promote inquiries into the History, Religion, Literature, Arts, and Social Condition of the present and former Inhabitants of the Island, with its Geology, Mineralogy, its Climate and Meteorology, its Botany and Zoology."**

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## *ERRATA ET ADDENDA.*

Page 351, note ‖, *for* "p. 124" *read* "p. 62."
„ 352, line 2, *for* "Van Goen" *read* "Van Goens."
„ 353, note ‡, *for* "Norasa" *read* "Novasa."
„ 358, note *, *for* "p. 123" *read* "p. 62."
„ 358, note †, *for* "p. 126" *read* "p. 63."
„ 359, line 30, *for* "Taylor" *read* "Tylor."
„ 359, note *, *omit* "Die omfánge der cultur übers."
„ 359, note †, *for* "Taylor" *read* "Tylor."
„ 359, note †, *for* "Spang" *read* "Spangel."
„ 868, note †, *for* "Zuitf." *read* "Zeits. für" *passim.*
„ 378, note *, *for* "Mokna" *read* "Mokua."
„ 381, line 2, *for* "Ḛlu" *read* "Eḷu."
„ 381, note *, *for* "p. 104" *read* "p. 61."
„ 384, line 12, *for* "*κολορα*" *read* "*κολοβὰ.*"
„ 387, last line, *after* "precipices" *insert* "(*λιθίνοις σπηλαίοις*)."
„ 388, line 16, *for* "Zvortvan berwe beandend," &c., *read* "Zwart van verwe, brandend," &c.
„ 394, line 6, *after* "Skull No. 1" *insert* "(Table I.)."
„ 394, line 11, *for* "Dewilané" *read* "Denilane."
„ 398, line 13, *for* "Busle" *read* "Busk."
„ 398, line 14, *for* "two last" *read* "last two."
„ 398, line 31, *after* "Museum," *insert* "(Table I., Fig. 3)."
„ 399, line 21, *for* "Weleker" *read* "Welcker."
„ 402, line 11, *for* "*occipitale*" *read* "*occipitalis.*"
„ 404, line 10, *for* "76" *read* "7·6."
„ 404, line 12, *after* "skull" *insert* "(Flower, No. 683)."
„ 406, line 16, *for* "chamæprosopous" *read* "chamæprosopic."
„ 406, line 29, *after* "skull," *insert* "(No. 675)."
„ 406, line 35, *for* "alreolar" *read* "alveolar."
„ 406, line 36, *for* "basilar alvesli" length *read* "basi-alveolar length."
„ 407, line 2, *for* "basinasel" *read* "basinasal."
„ 409, line 2, *for* "Bernard" *read* "Barnard."
„ 411, line 18, *for* "von" *read* "van."
„ 411, line 19, *for* "vrijser ruf tig" *read* "vrij vernuftig."
„ 411, note *, *for* "Tambulus" *read* "Jambulus."

## *ERRATA IN VOL. VIII., No. 29.*

Page 248, "Remarks" column, "Sweetness" should be in a line with *rahatiyá* and not with *kiri-kabalu*.

" 254, " " *for* "kinds" *read* "kind."

" 254, " " after each of the words *kaḷugeḍi*, *maha*, *ȩt*, *há*, and *rilá*, there should be a dash ( — ), representing the word *ȩmbayá*.

" 259, " " *for* "crying from *aḷu*" *read* "crying" from *aḷu*.

" 266, note †, "*At the Birth of Buddha*" should not be in italics, and there should be a comma, not a full stop, after it.

" 269, line 13 from bottom, *for* "On-king" *read* "Ox-king."

" 269, line 12 from bottom, *insert* "your" between "Lend" and "strength."

" 306, note ‡, the last paragraph beginning "Winslow," &c., should appear as a note to the words "At one of the hours fixed for this purpose," on opposite page.

" 311, line 17 from top, *for* "old" *read* "ola."

" 311, note ‡ should appear as a note to the sentence ending "offered as a *poŋkal* to the deity." The original note to "facing north" has been omitted. It should run: "*vide ante*, p. 307, note †."

" 315, lines 11 and 12 from top, "*kávaṭcheyya*" should be within parentheses, and "the heap" should not be within parentheses.

" 316, note ‡, *for* "A hut is like" *read* "A hut-like."

" 317, line 12 from bottom, "*Piḷḷaiyár*" should be without parentheses.

" 320, line 22 from bottom, *for* "Private" *read* "Saivite."

" 325, line 3 from bottom, *for* "ówiṭa" *read* "óviṭa."

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